Smoking during pregnancy : an attachment theory perspective

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Smoking during pregnancy, an Attachment Theory perspective.

Thesis for the submission to a Ph.D. degree

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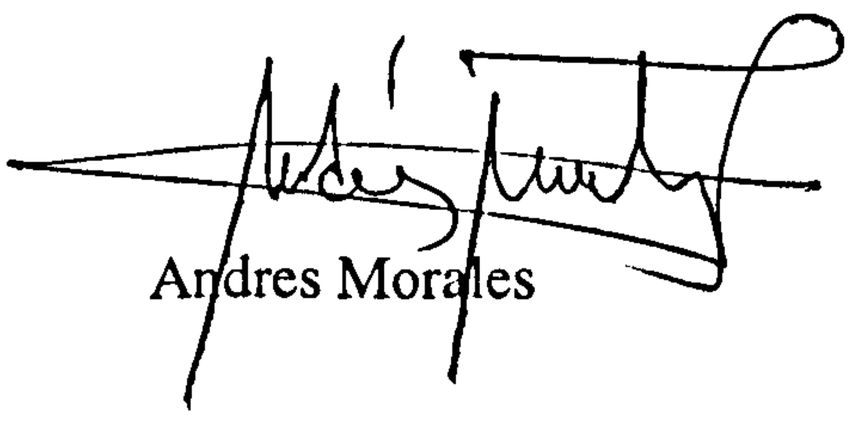
8 December 2004

To Whom it may concern

This is to confirm that all the work contained in my PhD thesis, "Smoking during pregnancy, an Attachment Theory perspective", is my own.



Andres Morales

Abstract.

Background: Smoking during pregnancy has been identified as the major preventable cause of perinatal morbidity and mortality in the developed world. In Britain, national campaigns have not been entirely successful in reducing the prevalence of smoking during pregnancy. Epidemiological studies have identified several socio-demographic and psychosocial factors associated with smoking during pregnancy, but few studies have looked more specifically at relational aspects regarding the emotional link between the mother, the fetus and the partner. Some of these studies have shown that women who smoke tend to be single parents or to have a diminished emotional bonding to the fetus.

Objectives: The purpose of this thesis is to further explore factors associated with smoking during pregnancy, particularly the relational and cultural aspects, emphasizing relationship factors from an Attachment Theory perspective. This may provide a theoretical framework to integrate different findings in terms of quality of close relationships and may lead to better understanding of the psychological background associated with persistent smoking behaviour in these women. Thus, women who smoke during pregnancy would differ from non-smokers not only in their socio-demographic characteristics but also in psychological characteristics which affect their ability to relate with others such as their adult pattern of attachment.

Methods: Four different studies are included in this thesis. The first two are prospective studies in which general socio-demographic and obstetric variables were explored together with some evaluations of quality of relationship with the partner and the unborn baby. The first study was carried out in Britain and the second one in Chile (which additionally provided a trans-cultural perspective). The third and fourth studies were conducted among British women and looked more specifically into relationship and attachment variables.

Results: Consistent differences were found between smokers and non-smokers in the quality of the marital relationship across the four studies. The final study found that maternal fetal emotional bonding is lower in women who smoke and that the quality of bonding with the fetus depends on the mother's Adult Attachment Style and the quality of her marital relationship. Using an integrative multivariate analysis and combining samples from study 3 and 4, insecure avoidant adult attachment pattern, educational attainment and smoking status of the partner were the three variables with the strongest association with smoking during pregnancy. Implications for interventions and future research are discussed.

Chapter 1. Smoking during pregnancy

1.1 Introduction and Objectives

Smoking during pregnancy has been recognised as a major public health problem in Britain and most of the developed world (Department of Health, 1992; US Department of Health and Human Services, 1989) and the hazards to the mother's and fetus' health have been widely documented in many publications over the last three decades (Macleod and Maclaine, 1992; Postwillo and Alberman, 1992). This situation has led governments to implement preventive policies in order to reduce tobacco consumption during pregnancy (Health Education Authority, 1991, US Department of Heath and Human Services, 1990). In Britain, the Health Education Authority (HEA) has led the public campaign against smoking (HEA, 1991; 1996a) but its efforts over the last decade regarding smoking during pregnancy have not been entirely successful (HEA, 1996a). At least thirty per cent of women in Britain smoke and most continue to smoke when they become pregnant (HEA, 1996a; 1999). Information about health risks associated with smoking is widely available for the general population and health professionals working at the community level (HEA, 1993; 1994a; 1999) but does not seem to be effective in encouraging women to stop smoking.

Epidemiological studies have found a number of socio-demographic and psychosocial risks factors to be associated with smoking during pregnancy including: low socioeconomic status, low educational attainment, low employment status and younger age (HEA, 1994a; 1996a, 1999). Among the few studies which have looked at relational

aspects regarding the emotional link between the mother, the fetus and the partner, some have found evidence of alterations in the quality of these significant relationships. Women who smoke during pregnancy tend to be single (Dowset 1985; Cnattingius and Thorslund, 1990; HEA, 1996b), or to have a diminished emotional bonding to the fetus (HEA, 1996b; Hilton and Condon, 1989). Exploring these aspects of the problem further may throw new light on some relevant psychological factors which determine ability to stop smoking during pregnancy.

Attachment Theory (Bowlby, 1982; Bowlby, 1980) has been chosen as the theoretical framework to understand the role of significant relationships in the establishment of different behavioral patterns. Attachment Theory was developed by Bowlby (1982), based on psychoanalytic, ethological and evolutionist concepts, originally to explain why children suffered both physically and psychologically when separated from their mothers. Since then, with the collaboration of many researchers, Attachment Theory has evolved, expanding its applications to developmental psychology in children, and more recently, to adult psychology in terms of determining patterns of relating in adults. This may be applied to the study of the mother and baby relationship as well as couple relationships. An extensive review of Attachment Theory and its application to this research will be covered in detail in Chapter 4 of this thesis. In two studies used in this thesis, categories of adult attachment patterns will be examined in the search for differences between women who smoke during pregnancy and those who do not.

1.2 Hypotheses

The main hypotheses of this research programme are:

1.2.1 Compared with women who do not smoke, women who smoke during pregnancy will have a diminished Maternal-Fetal emotional bonding and an Insecure Adult Attachment pattern.

1.2.2 Using different evaluations, women who smoke during pregnancy will have a poorer quality of relationship with the partner.

1.2.3 Different cultural and social contexts will be important in determining smoking behaviour in pregnancy.

1.3 Studies carried out in this thesis

This research programme will test these primary hypotheses by drawing on four studies. The first two studies use existing data from previous research among pregnant women where smoking during pregnancy was not analysed in the first instance. The third and fourth studies employ specific measurements of attachment styles in women to test the main hypotheses regarding attachment and smoking behaviour.

1.3.1 Study 1: uses a sample of British women from a previous prospective study (Kumar and Robson, 1984) about postnatal depression in the general population, in

which differences between smokers and non-smokers in terms of pattern of relationships is explored.

1.3.2 Study 2: uses a sample of Chilean women from another previous prospective study (Jadresic et al., 1992) about postnatal depression in which differences between smokers and non-smokers in terms of pattern of relationships, and risk for postnatal mental disorder are explored.

1.3.3 Study 3: is a pilot study with a sample of three groups of British women attending an antenatal clinic in a general hospital during the third trimester of pregnancy. Differences between smokers, non-smokers and women who stopped smoking during the current pregnancy, in terms of socio-demographic characteristics, personality, psychiatric symptoms and quality of attachment relationships were explored. This study was carried out to determine sample size and general acceptance of the questionnaires and interview procedures.

1.3.4 Study 4: is the main study with a sample of three groups of British women attending the same antenatal clinic as in the pilot study, in which four measurements of attachment were obtained, along with measures of socio-demographic, marital and clinical variables.

The findings will be discussed in terms of their relevance to continuing smoking in pregnancy which can be regarded as a form of intransigent health behaviour. Suggestions

for new research will be discussed in relation to prevention and interventions to help women to stop smoking while they are pregnant.

1.4 Smoking in women

According to the current literature (US Department of Health and Human Services, 1989; 1990; World Health Organisation, 1998) cigarette smoking is the major single preventable cause of disease and premature death in the Western world. It causes coronary heart disease, stroke, cancers to the lung, mouth, larynx, and oesophagus, chronic obstructive lung disease, and other circulatory diseases (US Department of Health and Human Services, 1989; 1990; World Health Organisation, 1998a). Despite growing public concern about smoking and an overall reduction in smoking rates among adults in North America and the UK, smoking among women has declined much more slowly than among men (US Department of Health and Human Services, 1990; Nicolaides-Bouman et al., 1993). In the UK the general reduction in smoking prevalence is the result of public campaigns and policies implemented by health professionals and governmental agencies such as the Health Education Authority (HEA) over the last 20 years (HEA, 1991). However, in developing countries the tendency has been rather in the opposite direction, i.e., with a progressive increase in tobacco cigarette consumption particularly in women (WHO, 1998b). The World Health Organisation (WHO) in its regularly published updates on patterns of tobacco smoking has shown that, as smoking decreases in the West, the tobacco industry, in search of new markets is making huge investments in targeting women and girls with aggressive and seductive advertising that exploits ideas of independence, emancipation, sex appeal and slimness. Such advertising

erodes socio-cultural restraints which previously discouraged smoking among women (WHO, 1998b; Jacobson, 1986). In many developed countries, there is already a trend towards more smoking among teenage girls than among boys (HEA, 1996b; Moss et al., 1992). Studies have shown that smoking among women presents a special problem for public health not only because women who smoke bear all the negative health consequences that male smokers endure, but they also experience other, gender specific, consequences (HEA, 1994b; 1996b). For instance, women who smoke are at increased risk of premature menopause and impaired fertility (WHO, 1997; Howe et al., 1985). They also have an increased risk of cervical cancer (Jacobson, 1986; WHO, 1997) and increased risk for cardiovascular accidents associated with oral contraceptives (Jacobson, 1986). Despite the decrease of smoking prevalence in the general population in developed countries over the last 20 years, in the UK the decrease in smoking prevalence in women has been significantly less pronounced than for men. The proportion of men who smoked cigarettes decreased steadily from 52% in 1972 to 42% in 1980 and to 31% in 1990. Among women the proportion of cigarette smokers decreased from 41% in 1972, to 37% in 1980. Thereafter the proportion fell to 33% in 1982, and then decreased gradually to 29% in 1990 (HSMO, 1992).

Surveys of pregnant women conducted by the HEA showed that in 1996 46% of women smoked during the 12 months before the pregnancy (HEA, 1996a) compared with 45% in the 1999 HEA survey (HEA, 1999).

1.5 Smoking during pregnancy

The deleterious effects of cigarette smoking in pregnancy have been known for almost 30 years (Butler et al., 1972; Macleod and Maclaine, 1992). Cigarette smoking during pregnancy is now considered to be one of the major preventable risk factors in perinatal morbidity and mortality (US Department of Health and Human Services, 1990b; Butler et al., 1972). There is a direct correlation between the amount of smoking during pregnancy and the frequency of spontaneous abortion and fetal death (US Department of Health and Human Services, 1989; Kline et al., 1977), as well as a direct correlation between the amount of cigarettes smoked and decrease in infant birth weight (US Department of Heath and Human Services, 1990; HEA, 1994b). Smoking in pregnancy also results in increases in abruptio placentae, vaginal bleeding, placenta previa (Meyer and Tonascia, 1977), premature rupture of membranes, preterm birth, and perinatal loss (Postwillo and Alberman, 1992; Mulcahy and Murphy, 1972). Reduction in infant birth weight is also accompanied by reduction in head and chest circumference and shorter stature (Postwillo and Alberman, 1992). Maternal smoking also increases a child's chances of developing colds, asthma, other respiratory diseases and middle ear infections (HEA, 1994b) and particularly increases the chance of dying of sudden infant death syndrome (SIDS) which has been reported to be up to four-fold higher than in non-smokers (Anderson and Cook, 1997). There are also associations between smoking in pregnancy and congenital malformations (Kelsey et al., 1978), impaired intellectual and physical growth (Butler et al, 1973; Goldstein, 1971), and behavioral problems in offspring (Bagley, 1992; Rantakallio et al., 1992).

Two substances present in tobacco smoke have been identified to be associated with most of the harmful effects on the fetus when women smoke during pregnancy: nicotine and carbon monoxide (Lambers and Clark, 1996). A summary of some of the more recent reports about the effects of nicotine and carbon monoxide in pregnancy is given in Table 1.1 below:

Table 1.1 Nicotine and Carbon Monoxide negative effects

Author	Subjects	Findings	Mechanism
Slotkin et al.,1997	rats	Prenatal exposure to nicotine causes neurobehavioural teratogenesis associated with deficiencies in brain cell numbers.	Altering the program of neural cell differentiation by direct action and indirect action via hypoxia-ischaemia.
Lambers & Clark, 1996	humans	Nicotine and carbon monoxide interact to induce physiological effects on the mother and fetus resulting in more spontaneous abortions, more premature deliveries and reduced birth weight.	Nicotine increases blood pressure and heart rate with concomitant reduction of uterine blood flow in the mother, with a combination of vasoconstrictive effect of nicotine and decrease of oxygenation because of roused carboxyhemoglobin.
Tolson et al., 1995.	rats	Cardiac cell damage could emerge as a consequence of concurrent, repeated exposure to nicotine and hypoxia.	Hypoxia inhibits DNA synthesis and increases ornithine decarboxylase (ODC), a marker for cell damage
Ellard et al., 1996.	humans	Nicotine dose dependence of birth weight deficits.	The influence of nicotine exposure appears to be biphasic, one mechanism operating at very low levels of nicotine intake and the other causing seemingly linear dose-related effects for active smokers.

Slotkin et al., 1995.	rats	Loss of neonatal hypoxia tolerance after prenatal nicotine exposure	Deficiency in an essential factor in response to hypoxic challenge: adrenomedullary cathecolamine release.
Lewis & Bosque, 1995.	humans	Deficient hypoxia awakening reponse in infants of smoking mothers.	Higher levels of cotinine in mothers who smoke associated with lower birth weight and failure to awake with hypoxia by impairment in postnatal chemoreceptor control of ventilation and of hypoxic awakening response.
Knoll et al., 1995.	hamsters	Ciliary beat frequency of oviducts is decreased in vitro by exposure to solutions of cigarette smoke	Nicotine concentrations similar in range found in human smokers produced about 50% inhibition of ciliary beating of oviducts.
Roy & Sabherwal, 1994.	rats	Prenatal nicotine exposure delays neuronal maturation and affects intracytoplasmic membrane systems.	A significant reduction in body weight and brain weight was observed in nicotine exposed groups as well as reduction in cortical thickness and decreased dendritic branching, increased dendritic spine density, irregular arrangement of cisternae of rough endoplasmic reticulum, paucity of free ribosomes, and frequent cytoplasmic vacuoles in many neurons.
Maritz & Thomas, 1994.	rats	Nicotine prenatal exposure interfered with the morphometric and morphologic characteristics of the septa of lung tissue	Swelling of type II and interstitial cell mitochondria. The type I: type II cell ratio deceased as a result of type II cell proliferation. The number of capillaries in

		of the offspring	the septum was lower and ruptured blood-air barriers also occur in the exposed group.
Richardson & Tizabi, 1994.	rats	Prenatal exposure to nicotine induced "hyperactivity" in the offspring	Dopamine concentrations decreased in striatum and ventral tegmental area and increased in substantia nigra of the "hyperactive" offspring.
Carratu et al., 1995.	rats	Prenatal exposure to relatively mild CO concentrations produced behavioral and electrophysiological dysfunction in rat offspring.	Reduction in the frequency of ultrasonic calls emitted by rat pups removed from their nest and alterations in the acquisition of an active avoidance task would be mediated by direct CO neurotoxity. It also affects peripheral Nervous System by altering the sodium channel functioning and myelinogenesis.
Di Giovanni et al., 1993	rats	Gestational exposure to mild CO concentrations induces behavioral changes characterized by altered ontogeny of emotional responsiveness to environmental challenges and by learning impairment	CO affects the ontogeny of central Gabaergic neuron function in rats which is involved in the mediation of ultrasonic vocalization which is an behavioral indicator of distress.

The review of the recent literature gives solid empirical support to the thesis that most of the harmful effects of smoking in pregnancy are mediated by the concurrent action of nicotine and CO, two substances present in tobacco smoke which act in different ways to produce several clinical conditions either specifically or in an additive manner.

There is also evidence that other substances delivered by tobacco smoking such us tar may also have a role in the pathogenesis of different conditions associated with smoking during pregnancy. Bnait and Seller (1995) reported that the ultraestructural changes induced by mothers' tobacco smoke inhalation in mouse embryo cells of the neural plate, surface ectoderm, perichardium and heart were more marked using higher tar cigarettes, suggesting depressed metabolic activity. However, the same authors in another study (Seller and Bnait, 1995), in which tobacco smoke was given to pregnant mutant mice, made more explicit that the detrimental effects of tobacco smoke exposure are present using high tar or low tar cigarettes, indicating that tobacco tar modification is not really beneficial to the developing fetus, particularly if there is some genetic predisposition to an abnormality. This may have implications for humans and may explain the generally inconclusive findings regarding congenital malformation in the children of women who smoke during pregnancy (Kelsey et al., 1973).

1.6 Factors associated with smoking during pregnancy.

There are many studies reporting that smoking during pregnancy is associated with particular socio-demographic, environmental or psychological characteristics of the

women. A summary of the factors most often reported to be associated with smoking during pregnancy is given in Table 1.2 below.

Table 1.2 Factors associated with smoking during pregnancy.

Author	Subjects	Findings
HEA , 1994	British pregnant women	Younger age, higher pre- pregnancy level of smoking consumption, low social class, higher parity, low educational attainment, single marital status, having a partner who smokes and environmental adverse conditions.
Land & Stockbauer, 1993	Black and White teenagers in Missouri	White Caucasian women
Waterson et al., 1990	British women	Multiparity
Cnattingius et al., 1992	Pregnant women in Sweden	Low educational attainment, not living with the father of the baby, high parity, heavy smoking and daily passive smoking.
Macknight & Merret, 1986	British women	Lower employment status
Blakburn & Graham, 1993	British women	Lower social support and limited social context.
Quinn, et al., 1991	British women	Later attendance for prenatal care and lack of nausea at the beginning of pregnancy.
Haug et al, 1993	Norwegian women	Smoking before the age of 15.
Adams et al., 1989	North American Women	Unplanned pregnancy
Wells & Batten, 1990	British women	Low income, poor housing and presence of pre-school children at home.

According to this empirical evidence, a typical profile of a woman who continues smoking in pregnancy would be: young, uneducated, poor, socially deprived, without a partner, or living in poor housing with a partner who smokes, with one or more children to look after. In the next section some recent British research into pregnant women who smoke is reviewed to examine possible distinctive characteristics of this population in more detail.

1.7 Smoking in Pregnancy in the UK

In Britain, the deleterious effects of cigarette smoking in pregnancy described above have been reported in official documents from the HEA (1994) and by independent researchers (Madeley et al., 1989). It has been estimated that there are over half a million women in England and Wales each year who are expecting a baby (Lucas, 1993). Assuming that about one third of these women smoke, potentially 200,000 babies each year will be exposed to the products of their mother's tobacco smoke. These findings have led to the recognition of smoking during pregnancy as a public health problem and the setting of a specific target for the year 2000 in the Health of the Nation white paper (1992):

"In addition to the overall reduction in prevalence, at least 33% of women smokers to stop smoking at the start of their pregnancy by the year 2000".

In 1998, the Government's White Paper, "Tobacco, Smoking Kills", based on data from the 1995 Infant Feeding Surveys, set a target to reduce the percentage of women who

smoke during pregnancy from 23% to 15% by the year 2010, with a fall to 18% by the year 2005.

However, annual surveys of national representative samples carried out by the HEA to monitor their anti-smoking campaign between January 1992 and March 1999, have shown that, despite a national mass-media campaign, the proportion of women who continue smoking during pregnancy increased from 27% in 1992 to 30% in 1999. The HEA tracking survey (1996) has consistently found that the proportion of women who report that they are currently smoking in pregnancy is about a third less than the proportion who report they were smoking in the 12 months before they became pregnant. Thus, in 1996 46% of women reported smoking in the 12 months before they become pregnant whilst 32% reported they were currently smoking. In 1999, 45% of women reported smoking in the 12 months before the current pregnancy and 30% reported they were currently smoking. Interestingly, the proportion of pregnant women who have never smoked has remained fairly constant over the series of surveys (43% in the 1996 survey, 42% in the 1999 survey), but the proportion of pregnant women who report that they are currently smoking has increased from just over a quarter (27%) of pregnant women at the baseline survey in 1992, to almost a third (32%) in 1996 and 30% in 1999. This trend could be attributable to the general rise in smoking levels amongst teenage girls and younger women which has been reported in other surveys (OPCS, 1993).

The HEA studies (1996; 1999) were the most comprehensive source of current information about smoking in pregnancy in Britain and it is worthwhile to review some of their findings:

i) Looking at current smoking levels by different trimesters of pregnancy this study shows clearly that the proportion of women who stop smoking altogether during pregnancy is quite small and that those who stop tend to do so in the first trimester. Thus, in the 1996 survey, 36% of women in their first trimester of pregnancy were currently smoking compared with 31% of women in their second trimester and 30% of women in their third trimester. In 1999, 46% of women were smoking at the first trimester of pregnancy, 31% in their second trimester and 27% of women in the third trimester.

ii) This does not mean that smokers do not change their smoking habits during pregnancy, in fact, a majority of smokers do change their smoking habits either before or during pregnancy although they do not give up altogether. The HEA surveys have consistently shown that pregnant smokers are more likely to cut down on the amount they smoke rather than give up altogether. Despite the rise in the proportion of pregnant women who remain current smokers during pregnancy the proportions of smokers who give up and who cut down have remained similar over the period of the surveys. Thus, in the 1996 survey, 40% of women who smoked in the 12 months before the pregnancy reported that they had cut down, while 25% reported they had given up altogether. A further 23% of women who smoked in the 12 months before their pregnancy reported making no changes at all to their smoking behaviour. In 1999, 43% of women of women

who smoked in the 12 months before the pregnancy reported that they had cut down, while 28% reported they had given up altogether, and 20% of women made no change in their smoking behaviour.

iii) Reducing smoking as a result of pregnancy tends to be a function of social class, with women belonging to upper and middle classes more likely to make a positive change. A 1995 survey found that smokers or recent ex-smokers from social groups ABC1 were twice as likely to have given up altogether compared with women from social groups C2DE (38% and 19% respectively). However, the 1996 survey did not find the same degree of difference, with 28% of respondents from upper and middle classes giving up altogether compared with 23% of women from social groups C2DE (working class). In 1999, 44% of women from upper and midlle class gave up altogether compared with 22% of women from working class.

iv) Regarding knowledge and beliefs about the risks of smoking during pregnancy, awareness about the dangers of smoking during pregnancy remained consistently high over the five-year period of monitoring. In the 1996 survey, 80% of pregnant women thought that smoking during pregnancy was dangerous to the pregnant smoker herself while 92% thought that it was dangerous to the unborn child. However, they were unclear about the physical and biological effects that smoking might have on the fetus. Only half (50%) of current smokers agreed that smoking during pregnancy resulted in poisonous chemicals being transferred to the baby's blood and 66% of them vs. 54% of non-

smokers thought that it did not matter how small the baby was when it was born since it would grow.

The HEA study also evaluated the support provided by health professionals and found that the number of pregnant smokers receiving advice from health professionals had fallen from 51% in 1992 to 39% in 1996, although there was little evidence that advice from a health professional has any effect on the smoking behavior of pregnant women. At most, those who received advice were more likely to cut down than those who did not receive it (37% vs. 42% in the 1996 survey).

More recent surveys (HEA, 1999) have shown that the prevalence of smoking in pregnancy remained fairly fluctuating over almost ten years after the HEA launched its Smoking and Pregnancy Campaign. In 1999, 30% of pregnant women reported that they were smoking. This increase in smoking prevalence in pregnant women was associated with the rise in smoking prevalence among teenage girls and younger women as reported in other surveys.

In summary, smoking in pregnancy in the UK remains prevalent and, in fact, has increased over the 9 years surveyed. Until 1996, women seemed to be informed about the general risk but not about specific pathologies associated with smoking in pregnancy. In the 1999 HEA survey, 83% of pregnant women thought smoking during pregnancy was dangerous to the pregnant smoker and 91% thought smoking was dangerous to the unborn child, but only 35% of current smokers thought that smoking was very dangerous

to the unborn child compared with 81% of non-smokers who thought so. In the 1999 survey, 85% of pregnant women thought that parental smoking increased a baby's risk of getting chest infections and asthma (86%) and 62% felt that parental smoking increased the risk of cot death. However, women who were current smokers thought there was less risk of parental smoking causing such conditions than non-smokers. There was still an apparent lack of knowledge among pregnant smokers of some health risks of parental smoking for the unborn child such as cot death (29%) and glue ear (53%). The HEA surveys have consistently shown that pregnant women who smoke are much more likely to have a partner who smokes. In 1999, 72% of current smokers reported that their partners smoked. Only 30% of women considered their partner's advice or suggestions to give up smoking useful and the majority (70%) did not. There was no evidence that advice from the partner had any effect in terms of encouraging pregnant smokers to give up. Advice from health professionals has decreased significantly over the nine surveys tracks, with a smaller proportion receiving advice in 1999 (44%) than in the 1992 base line survey (54%). Although there is little evidence from these surveys that advice from health professionals has any effect on the smoking behaviour of pregnant women in terms of giving up altogether, smokers who received advice from a health professional seem to be more likely to cut down on the amount they smoke (44% vs. 34%). This decrease in the advice from health professionals may reflect also a decrease of awareness of the risks associated with smoking in pregnancy amongst health professionals and/or the lack of specific skills and resources to deal with the problem. Although pregnancy induces a change of smoking habits in most women who smoke, the proportion of those who stop altogether is still very small, and the proportion of women who do not change at all is

still very significant, particularly in younger, unsupported, working class and poorly educated women, with a prevalence of 49% in the 1996 HEA survey and 51% in the 1999 survey.

The 1999 HEA survey also reported that younger women, particularly those from social groups C2DE, were less likely to have a partner (63% vs. 86% of all respondents)

The level of smoking in the general population was far from the Health of the Nation's target for the year 2000 despite the efforts of agencies like the HEA, suggesting that the problem is more complex than was thought when the campaign was conceived and that other factors should be considered to develop more effective interventions. However, the Infant Feeding Survey in 2000 reported a provisional 18% of smoking prevalence during pregnancy only for England. In recognition of the difficulties in reaching the targets for smoking cessation, the Health Minister announced extra funding for dedicated smoking cessation services for pregnant smokers to be set up in all Health Authorities in England from 2001 on (NHS, 2004).

1.8 Qualitative data on smoking during pregnancy

Qualitative research carried out by the HEA in 1991 to implement a national anti-smoking in pregnancy campaign (HEA, 1996) found that whether women continued to smoke or not during their pregnancy was influenced by a whole range of factors such as having an unplanned pregnancy, financial pressures, a difficult, or no, relationship with a

partner, low self-esteem, and the presence of a smoking environment. This meant that women tended to focus very much on themselves during the pregnancy. Such an inward focus would lead to the health-risks of smoking for the unborn baby being overshadowed by the more immediate problems in their lives and would made them less able to reject their smoking habit. By contrast, women who successfully gave up smoking during their pregnancy tended to be characterised by being in a supportive relationship, having no financial pressures, and having high levels of self-esteem. These women tended to focus on the baby during pregnancy and so were extremely concerned about the health risks of smoking to the unborn baby.

Most of the empirical evidence available on pregnant women supports a model in which smoking appears to be an habitual coping mechanism for women who either are susceptible to stress and/or lacking in protective factors against stress, particularly the lack of external (partner, and deprived socio-economical situation) and internal (self-esteem) support. Therefore, the association between stress and the absence of protective factors in women who smoke during pregnancy should be considered, in a proportion of subjects, along with the presence of nicotine dependence symptoms, which would add to difficulty of stopping smoking in this population. From 1997 onwards, pregnant smokers were asked how soon after waking they normally smoked their first cigarette, which provides a measure of the level of addiction. In 1999 survey, 18% reported smoking their first cigarette within five minutes of waking, with a further 11% smoking their first cigarette within 15 minutes. Only 22% reported smoking their first cigarette more than two hours after waking.

When pregnant smokers were asked to state their single main reason for smoking during pregnancy in the 1999 survey, 35% cited habit, 31% cited addiction, 19% to relieve stress and 5% for enjoyment. A further 2% smoked to keep their weight down, 3% for relaxation and 2% smoked to relieve boredom.

1.9 Introducing Attachment Theory as a integrative model

A comprehensive model is needed to understand the interactions between quality of relationships, personality characteristics and deprived social settings, and how those interactions may elicit distress and subsequently activate coping mechanisms in pregnant women. Attachment Theory (Bowlby, 1982) provides a good theoretical framework for a model in which personal predisposition (attachment patterns) acquired during early psychological development could influence the development of supportive relationships and good levels of self-esteem in women. As Bowlby (1988) said, "each person's resilience or vulnerability to stressful life events is determined to a very significant degree by the patterns of attachment he or she develops during early years". Such resilience may be construed as a secure pattern of attachment which allows the pregnant woman to experience concern for the well-being of the baby to-be in a way that assists her to abstain from smoking. There are different ways of measuring attachment in adults, some of which may be more theoretically or pragmatically useful than others for explorations of maternal smoking behaviour. Attachment Theory will be reviewed

extensively in following chapters of this thesis, particularly in relation to current developments in adult and maternal-fetal emotional bonding.

The purpose of this thesis is to explore to what extent emotional bonds, in terms of style of attachment with significant figures, protect against smoking behavior in pregnancy and to what extent they predict the risk of continuing smoking in women who were smokers and who become pregnant.

Individual differences in terms of psychological factors such as personality traits and self-esteem, as well as psychiatric conditions and symptoms, have been reported to be associated with smoking. The following section is a review of psychological differences between smokers and non-smokers in general and smoking in pregnancy in particular.

Chapter 2. Personality factors and psychiatric morbidity associated with smoking during pregnancy.

The association of personality factors with smoking in the general population has been reported in several studies, in which extroversion and neuroticism seem to be the features most often investigated (Patton et al., 1997; 1993). Other personality factors such as hostility (Whiteman et al, 1997; Lipkus et al, 1994), lower self efficacy and higher state anxiety (Tunstall et al., 1985), antisocial tendencies (Patton et al., 1997), impulsivity and sensation-seeking traits (Glassman and Koob, 1996) have also been reported to be associated with smoking in the general population. There are few reports regarding specific personality characteristics of women who smoke during pregnancy and the available literature on personality variables of smoking women does not add much to what is known for the general population already cited above. Nevertheless, there is some empirical evidence about gender differences in smoking. In Graham's (1987) study amongst working-class women, she identified four characteristics of smoking behaviour in this population:

i) The management of negative feelings, particularly anger, in the context of caring for others.

ii) Using a cigarette to create a temporary pause in the daily routine, creating a "personal space".

iii) Re-imposing a structure when caring breaks down. This feature is a combination of the preceding two, for example, creating space after an angry outburst directed at the children.

iv) As an affordable, personal luxury where all other expenditure is non-personal and mundane.

This study is concordant with others in which coping with stressful situations and negative feelings seems an important feature in women who smoke (Jacobson, 1981). This author gives five reasons why women continue to smoke despite knowledge of the risk to their own health (and that of their fetuses):

i) Stress, in particular the fear of having nothing to rely on when in a difficult or frightening situation.

ii) Smoking instead of expressing one's negative feelings

iii) Maintenance of affect: leveling out the highs and lows of emotions.

iv) Fear of putting on weight.

v) Fear of failure, particularly in the context of being "a woman in a man's world".

Wells and Batten (1990) have refuted the assertion that women's smoking is largely stress related, because, in a study examining women's stress, social class and smoking status, they found that almost all the women in their random sample suffered from stress, irrespective of social class or whether they were smokers or non-smokers. Smokers as a group did not appear to suffer more stress than their non-smoking contemporaries.

However, these authors agree with Graham's suggestion that woman who emphasize smoking as a vital coping strategy are likely to live on a low income, in poor housing and often live in isolated conditions with pre-school children; they also agree that women on low incomes and caring for young children use cigarettes as a means of providing personal space. Nevertheless, they maintain that not *all* women who smoke do so to relieve stress, and suggest that smoking is "just one part of a complex system of coping mechanisms".

It seems a paradox that low-income women use their money to smoke cigarettes instead of using it for more basic needs. However, this is consistent with a trend in the general population: although smoking prevalence has declined among adults in Great Britain over the last twenty years, most of the change has been among the middle and upper class population and comparatively little change has occurred among those of lower socioeconomic status (Wald et al., 1988). Data from the 1988 General Household Survey indicate that less than one in five males and females in professional households are smokers, compared with 43% of males and 39% of females in unskilled manual households (OCPS, 1992). A social class gradient in the distribution of cigarette smoking is also apparent in other developed countries such as the USA (Pierce et al., 1989a) and Australia (Hill et al, 1991). Projections based on a continuation of current trends in the United States suggest that smoking will increasingly become a characteristic of the working class (Pierce et al., 1989b). These findings are consistent with epidemiological studies in the UK among women, in which continuation of smoking during pregnancy also has a strong inverse correlation with indicators of socio-economic status (Wakefield

et al., 1993). In a qualitative study among low-income women, Graham (1987) concluded that smoking served "as both an affordable luxury and necessity when material and human resources are stretched (by making) the burden of sacrifice in other areas of consumption easier to bear". In addition to this, Graham (1987) and others such as Muller (1987) and Gillies et al. (1989) have also suggested that smoking offers women important benefits in terms of mood control, particularly in reducing anxiety and enhancing relaxation. Muller (1987) and Graham (1976) have reported that one of the barriers women perceive to quitting smoking during pregnancy is the detrimental effect it may have upon their relationship with their partner and many woman also report their concern about the irritability associated with tobacco withdrawal. Thus, the functional role of smoking in an intimate relationship may also play against behavioural change. Furthermore, the role of support from the partner in quitting smoking has been signalled as primordial by many women looking for factors to help in stopping smoking in different studies (Copotelli and Orleans, 1985; Cohen and Lichtenstein, 1990; HEA, 1996). However, despite the adverse factors, there is evidence that some working class women do achieve cessation. In a study looking at factors associated with quitting smoking during pregnancy in working class women, Wakefield et al. (1993) found that the most important variables determining the ability to quit smoking were: having a non-smoking partner, having had a previous period of smoking abstinence lasting more than one week, and having a stronger belief that smoking will produce more respiratory infections in the baby once is born. From these findings it is clear that there are at least two factors working in close interaction which allow the mother to make behavioural changes: the role of nicotine dependence and the role of quality of close relationships,

firstly the quality of the support provided by the partner and secondly the quality of the emotional bonding with the unborn baby.

The need for a wider, yet integrated approach is emphasized by Lundberg et al. (1991) in their study of smoking cessation in which they concluded from regression analyses that socioeconomic and demographic factors contributed little to predict cessation rates, so "..it is more likely that many other factors than those should be included in the analysis, such as motivation, nicotine dependence, personality type, self efficacy, availability of therapeutic support etc, which act together in a complex way, and would substantially increase the explained variance in smoking cessation."

There is evidence that, indeed, many women experience stress and negative feelings during pregnancy (Raphael-Left, 1991; Russell, 1974; Ruble et al., 1985) and for some women smoking could be the main coping strategy to deal with them, particularly when several other risk factors are present. The suggestion that women are more likely than men to use cigarettes to control negative affect is consistent with the more empirically based findings of several authors. A considerable number of studies do support the view that women's smoking is more likely than men's to be linked to negative emotions. Some of these studies are summarised in Table 2.1 below.

Table 2.1 Women's smoking and negative affect.

Study	Subjects	Findings
Ikard et al, 1969	1157 men; 937 women	Women scored significantly higher than men on negative affect reduction scales
Frith, 1971	63 men; 48 women	Women showed greater desire to smoke under emotional strain/anxiety; men more likely to smoke to relieve boredom.
Fisher, 1976	Undergraduates 28 men; 30 women	Women more likely to smoke to satisfy power wishes
Christen & Glover, 1983	37 men; 20 women	Women smoked more for tension reduction than did men; recommends gender-specific cessation programs.
Livson & Leino, 1985.	71 men; 82 women	Women who had more emotional conflict as adolescents more likely to smoke as adults; no such relationship for men.
Kandel & Davies, 1986	414 men; 510 women	Depressed affect associated with increased smoking in women but not in men
Livson and Leino, 1988	53 men; 65 women	Women more likely to smoke to reduce negative affect
Batten, 1985	204 men; 312 women	Women more likely to smoke for sedative effects.
Zuckerman et al, 1990	Undergraduates 422 men; 649 women	Women reported smoking more in "emotional situations"; men smoked more as an aid to concentration
Brandon & Baker, 1991	Undergraduates 134 men; 248 women	Women scored much higher on negative affect reduction scales.
Lynch et al., 1996	876 patients from family doctors	Smoking was positively related to depressive symptoms in women but not in men.

Studies of personality factors specifically associated with smoking during pregnancy are scarce. Counsilman and Mackay (1985) in a sample of 1790 postpartum women found that use of tobacco cigarettes was an attribute of "nervous, insecure mothers" and that smokers tended to have more emotional problems. No systematic evaluation using standardised personality assessment has been done specifically in pregnant women who smoke. This perhaps reflects the preconception that pregnancy does not affect women's psychological functioning and coping styles in a significant way, which seems not to be the case. Indeed, several authors have commented on the emotional upheaval experienced during the developmental changes associated with becoming a mother (Raphael Left, 1985; Ruble et al., 1985). We might say that pregnancy is an emotionally vulnerable period in which symptoms would probably be frequent in high risk groups, making behavioral changes difficult (HEA, 1996).

There are reports linking cigarette smoking in pregnancy and psychiatric morbidity such as depression, anxiety, addictions and dysphoric states (Blume and Russell, 1993; Zuckerman et al., 1989; Stewart and Strainer, 1995). Kandel and Davies (1986) reported an association between heavy smoking and depressed affect and reduced ability to establish intimate relationships with spouse and partner in women. Lynch et al. (1996) reported a strong association between depressive symptoms and smoking in women attending a family doctor. Empirically-based evidence supports the idea that pregnancy and the postpartum period are certainly a period of high risk for developing psychiatric symptoms in women (Heron et al., 2004; Kumar et al., 1996). Therefore, one can argue that it should be difficult for women for whom smoking represents a coping strategy to

just quit. Quitting can be particularly difficult if, as is now generally accepted, smoking is a form of nicotine dependence, a condition which is officially recognized as a disease (DSM-IV, APA 1994; ICD-10). The next chapter will review the current literature about nicotine dependence.

Chapter 3. Nicotine Dependence

3.1 DSM-IV Criteria for Nicotine Dependence.

In DSM-IV, nicotine dependence appears in the chapter on Substance-Related Disorders under the Nicotine-Related disorders heading, in the category of Nicotine Use Disorder with the code number 305.10. Under the Nicotine-Related Disorders heading there is also the Nicotine-Induced Disorder category which includes Nicotine Withdrawal (Code number 292.0) and Nicotine-Related Disorder Not Otherwise Specified (Code number 292.9).

The DSM-IV criteria for substance dependency (which also apply to nicotine) are defined as: "A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following occurring at any time in the same 12-month period:

3.1.1 **Tolerance**, as defined by either of the following:

(a) A need for markedly increased amounts of the substance to achieve intoxication or desired effect

(b) Markedly diminished effect with continued use of the same amount of the substance

3.1.2 **Withdrawal,** as manifested by either of the following:

(a) the characteristic withdrawal syndrome for the substance. For nicotine the diagnostic criteria are:

A- Daily use of nicotine for at least several weeks.

B- Abrupt cessation of nicotine use, or reduction in the amount of nicotine used, followed within 24 hours by four (or more) of the following signs:

i. dysphoric or depressed mood

ii. insomnia

iii. irritability, frustration, or anger

iv. anxiety

v. difficulty concentrating

vi. restlessness

vii. decreased heart rate

viii. increased appetite or weight gain

(b) the same or a closely related substance is taken to relieve or avoid withdrawal symptoms.

3.1.3- The substance is often taken in larger amounts or over a longer period than it was intended.

3.1.4- There is a persistent desire or unsuccessful efforts to cut down or control substance abuse.

3.1.5- A great deal of time is spent in activities necessary to: obtain the substance (e.g. visiting multiple doctors or driving long distances), use the substance (e.g. chain smoking), or recover from its effects.

3.1.6- Important social, occupational, or recreational activities are given up or reduced because of substance use.

3.1.7- The substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g. current cocaine use despite recognition of cocaine-induced depression or continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

According to DSM-IV, some of the generic dependence criteria do not apply to nicotine, whereas others require further explanation. Tolerance to nicotine would be manifested by the absence of nausea, dizziness, and other characteristic symptoms despite using substantial amounts of nicotine or a diminished effect observed with continued use of the same amount of nicotine-containing products. Cessation of nicotine use produces a well-defined withdrawal syndrome already specified above. Many individuals use nicotine to

relieve or to avoid withdrawal symptoms when they wake up in the morning or after being in a situation where use is restricted (work, aeroplanes). Individuals who smoke are likely to find that they use up their supply of cigarettes faster than originally intended. Although over 80% of individuals who smoke express a desire to stop smoking and 35% try to stop each year, less than 5% are successful in unaided attempts to quit (APA, 1994). Because nicotine sources are readily and legally available, spending a great deal of time attempting to procure nicotine is rare. Continued use, despite knowledge of medical problems related to smoking has been recognized as a particularly important health problem for several medical conditions in individuals and is closely related to smoking in pregnancy.

Craving for nicotine is also described as a important element in nicotine withdrawal that may account for the difficulty that individuals have in giving up nicotine-containing products. Other symptoms associated with nicotine withdrawal include a desire for sweets and impaired performance on tasks requiring vigilance (APA, 1994).

DSM-IV also includes the following specifiers that may be applied to a diagnosis of nicotine dependence:

i) With Physiological Dependence (evidence of tolerance and withdrawal symptoms)

ii) Without Physiological Dependence (rather a pattern of compulsive use, at least 3 of items 3-7)

iii) Early Full Remission (at least one month and less than 12 months)

iv) Early Partial Remission (same time as that above but with some of criteria for dependence met)

v) Sustained Full Remission (12 months or longer)

vi) On Agonist Therapy (if the individual is on a prescribed agonist medication: patches, nicotine chewing gum, etc. and no criteria for dependence on cigarettes have been met at least over the past month).

Hughes et al. (1987) applied DSM-III-R criteria to subjects classified as experiencing a tobacco dependence disorder and found that only 21% of this group showed the tobacco withdrawal syndrome according to DSM-III-R. These authors suggested that such a finding might indicate that either the DSM-III-R classification was not valid or the withdrawal syndrome was not an important feature for the occurrence of general dependence of nicotine. They went on to develop a further classification system in which they added increased appetite, impatience, somatic complaints and insomnia to the DSM-III-R criteria (Insomnia and increased appetite were subsequently added to the DSM-IV criteria). Even using these extended criteria, 54% of the subjects studied by Hughes' et al. (1987) did not experience a withdrawal syndrome. Similarly, in a study of relapse episodes, Shiffman (1985) found that only 45% of relapses were associated with withdrawal symptoms. Of these, physical symptoms were the most common (21%), followed by psychological symptoms (19%), appetite disturbances (10%), and disturbances of arousal (8%).

In an extensive review of the literature, Pomerleau and Pomerleau (1991) summarised the following effects of the psychopharmacology of nicotine:

i) "The consequences of smoking in habitual smokers include increased concentration/ability to tune out irrelevant stimuli, increased memory (recall), increased psychomotor performance, increased alertness/arousal, decreased anxiety/tension, increased/facilitation of pleasure, decreased body weight (perhaps due to decreased consumption of sweet tasting substances)".

ii) "Consequences of not smoking in habitual smokers include decreased concentration and ability to tune out irrelevant stimuli, memory impairment, impaired psychomotor performance, dullness and anhedonia, increased anxiety, tension, irritability, increased craving for cigarettes and increased body weight."

3.2 ICD-10 criteria for Nicotine Dependence

Nicotine dependence is also recognized in the ICD-10 in the chapter on Mental and Behavioral Disorders due to Psychoactive Substance Use, under the heading of Mental and Behavioural Disorders due to use of tobacco (Code Number F17). Here the diagnostic criteria correspond to a general Dependence Syndrome with a cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance takes on a much higher priority for a given individual than other behaviors that once had greater value. A central descriptive characteristic of the dependence syndrome is the

strong desire to take the psychoactive drug, alcohol or tobacco. Then, the other criteria follow:

3.2.1 Difficulties in controlling substance-taking behavior in terms of its onset, termination or levels of use;

3.2.2 A physiological withdrawal state when substance has ceased or reduced and the use of the substance to relieve or avoid withdrawal symptoms;

3.2.3 Evidence of tolerance;

3.2.4 Progressive neglect of alternative pleasures or interest because of the use of the substance;

3.2.5 Increased amount of time spent in obtaining, using or recovering from its effects;

3.2.6 Persisting with substance use despite clear evidence of overtly harmful consequences.

These criteria are similar to those in DSM-IV but without the particular specification for nicotine withdrawal syndrome.

3.3 Nicotine's psychoactive effects to induce dependence

The psychoactive effects of nicotine could be mediated by its selective inhibition of the monoamine oxidase (MAO), particularly its isozyme B form (Glassman and Koob, 1996). According to these authors: "MAO B is selective for the metabolic degradation of dopamine so that its inhibition would increase the functional availability of this neurotransmitter". Dopamine plays a key role in reward signalling and addiction (Koob, 1992; Glassman and Koob, 1996). The mesolimbic dopamine system that runs from the ventral tegmental area to the basal forebrain has been implicated in the rewarding properties of almost all drugs of abuse such as cocaine, amphetamine, heroin, alcohol and nicotine (Glassman and Koob, 1996; NIDA, 1998). These authors maintain that if the availability of dopamine is increased in this area, this could influence the vulnerability of an individual or animal to various aspects of addiction. However, Stolerman and Shoaib (1991) have shown that the inhibition of MAO B does not seem to be the crucial factor determining addiction to nicotine. Despite this, Glassman and Koob (1996) pointed out that the frequent epidemiological association of alcoholism and other drug addictions with smoking may have an explanation in the fact that "nicotine is able to further augment dopamine release through MAO B inhibition, this contributes to increasing an individual's likehood of addiction to other drugs of abuse and this would give a neuropharmacological basis to the proposal that cigarettes are a "gateway" drug." Consistent with this, there is evidence for "cross-priming" in which users of one addictive substance show elevated craving for or consumption of a drug if they have previously been administered a dose of another dopamine agonist (Self, 1998). For

instance, addicts' craving for cocaine during abstinence have been reported to be strongly enhanced by an acute dose of nicotine administered via trasdermal patch (Reid, M.S., et al., 1998).

The addictive potential of nicotine has been supported by empirical evidence in animals and humans and the increased availability of dopamine in the "reward pathway" (dopaminergic projections from the ventral tegmental area to structures such as the nucleus accumbens, amigdala, anterior cingulated and prefrontal cortex) seems to be important in terms of positive reinforcement for nicotine use (NIDA, 1998). However, there is empirical evidence that dopamine release may be triggered both by comsumption of a drug and by exposure to stimuli formerly predictive of drug consumption, i. e. through classical conditioning (Di Ciano, Blaha and Phillips, 1995). Robinson and Berrige (2000) have argued that repeated drug use sensitises the "reward system" so that stimuli with motivational significance elicit strong reactions, particularly if stimuli is drug related. This leads to heightened cravings that in turn contribute to the maintenance of a compulsive pattern of drug seeking and ingestion (Berrige and Robinson, 2003). This is relevant to consider the importance of having a smoking-free environment in order to succed in abstaining from smoking, particularly during pregnancy. Conversely, not having a smoking-free environment, such as having a partner who smokes, has been often reported by women who continue smoking during pregnancy.

Additionally, there is evidence that chronic use of addictive substances such as nicotine is associated with impairments in several cognitive functions. These impairments in

cognitive functioning appear to be associated with neuroadaptations in dopaminergic pathways, particularly dopaminergic projections to prefrontal cortex. Although regular smokers continue to experience dopamine boosting effects of nicotine, their endogenous dopamine systems are likely to be suppressed or down- regulated in a way that is more usually revealed during a period of acute abstinence (Powell et al. 2004). Authors like Wise and Munn (1995) have suggested that acute dopamine depletion during withdrawal might underlie the usual reports of anhedonia and dysphoria. Jentsch and Taylor (1999) have suggested that impairments of impulse control (or response inhibition) are related to decreased activity in the orbitofrontal cortex. This region is part of the dopaminergic mesocortical projections of the ventral tegmental area, which terminate widely throughout the prefrontal cortex. Cognitive impairements such as impairments of automatic response inhibition, elevated impulsiveness, risk taking on behavioural tasks and short-term over long term outcome predominance in decision making, have been reported to be associated with chronic use of addictive substances (Kaufman et al. 2003; Lejuez et al. 2002; Bechara et al. 2001). These cognitive dysfunctions may play a critical role in vulnerability to relapse, by reducing the addict`s ability to resist the strong habitual drug-using responses elicited by drug-related cues (Jenstch and Taylor, 1999). Spinella (2002) reported that in smokers, the degree of impairment on these cognitive tasks correlated positively with the amount they reported smoking.

Powell et al. (2004) have reported that administration of nicotine significantly improved some psychological correlates of smoking abstinence such as anhedonia, near significantly the response to some cognitive tasks involving sensitivity to financial incentive (reward responsivity), the ability to inhibit reflexive eye movements (response

inhibition) and the attentional bias to words with appetitive significance. The nicotine-induced increase on the ability to inhibit reflexive eye movemens was strongly related to smoking relapse. This task has previously been linked with activation of both pre-frontal cortex and anterior cingulate and, functionally, with executive cognitive processes. They reported also a near-significant trend towards greater nicotine-induced increase on attentional bias toward appetitive words to predict smoking relapse. This task tested the hypothesis that individual with high functional dopamine activity such as smokers who just had a cigarette should respond with dopamine release during exposure to cues with motivational significance and will increase their attention to them. Individuals with relatively low functional dopamine activity, such as acutely abstinent smokers should respond with a lower tendency to notice or attend to the same motivational cues. Although this results pointed out to a central role of nicotine in determining relapse risk, there is still a modulating role of genetic and personality factors which have been theoretically or empirically linked with brain reward functioning and dopamine pathways. Blum et al. (2000) have proposed a biogenetic model, the reward deficiency syndrome, to describe some individuals with constitutionally hypofunctioning reward systems who may be particularly drawn to the use of addictive substances because they are particularly effective for them in modulating psychological experience. In these personality or genetically defined subgroups nicotine administration should be associated with stronger effects.

Notwithstanding, there is no reason to exclude personality and attachment patterns as possible modulating factors influencing the brain reward system, particularly in pregnancy, a period in which major physiologic, psychological and psychosocial changes

are taking place. Attachment style is the final result of a long interaction with the attachment figure from the birth, throughout childhood, adolescence and adulthood, in which essential aspects of mental and emotional functioning are shaped and structured as internal working models (Bowlby, 1982). Internal working models are mental and emotional representations of attachment relationships, whose main function troughout life cycle is emotional regulation. Inagaki et al., (2005) have reported changes in autonomic control associated to a reward-receiving state in which there was a relative deactivation of the sympatethic system and predominance of parasympathetic system in rats. These results are suggestive of two different emotional states evoked by classical conditioning in which reward appears to be involved in emotional regulation. Using animal models Pijlman et al.(2003) have reported that stress may influence the sensitivity of subjects to rewarding stimuli and stress modality may differentially affect this sensitivity. Physical stress seems to cause anhedonia, while emotional stress might cause an increased sensitivity to reward. Increased rewarding effects of a dopamine agonist (cocaine) induced by emotional distress have been also reported by Ramsey and Van Ree (1993), suggesting an active role of stress in drug dependence. If activation of attachment system in women during pregnancy is basically an emotional stress activation, an increased sensitivity to reward would make not easy to stop smoking for women who do not have attachment relationships available to regulate stress. Social support has been reported to attenuate behavioral consequences of exposure to uncontrollable stressors in animal models (Andrade and Guimaraes 2003) and attachment relationships are particularly important for emotional regulation in stressful situations. A comprehensive review of attachment theory will be carried out in next chapters and the hypotheses about

the relevance of attachment factors in modulating smoking behaviour in pregnant women will be tested in study 3 and 4.

3.4 Conclusions

There is a role for nicotine dependence in smoking maintenance; it reflects physical dependence on nicotine independently of other constituents of tobacco smoke (Hughes et al., 1986; West & Russell, 1985; West et al., 1984). However, not all individuals who use tobacco regularly will be physically dependent on nicotine, this may be because the physiological and psychological changes produced by deprivation are too subtle to be assessed by current measures or because the use of nicotine has not only a biological base but also is part of an habitual maladaptive means of coping with stress (Marlatt, 1985). There is certainly an interaction between the pharmacological effects of nicotine and its incorporation in behavioural coping strategies and this could be acquired through different ways of conditioning (Pomerleau and Pomerleau, 1984). If inhaling smoke is a habit to relieve craving, this behaviour may acquire secondary stress reducing properties by itself. Thus, positive reinforcement for tobacco use may be provided by nicotine, together with environmental and behavioural stimuli that, through conditioning, also act as reinforcements for tobacco use. Particular conditions such as pregnancy, in which major psysiologic and psychological changes are taking place, and attachment and care-giving systems are activated in women, may be a circumstance in which women who

smoke experience increasing reinforcing stimuli to smoke as a rewarding behaviour. Women who are able to develop good quality attachment relationships and care-giving may have access to reward and positive reinforcement from the emotional regulation provided from the attachment relationship. Conversely, women who have more difficulties to develop emotional bondings or attachments might be at greater risk of continuing smoking.

After this review of smoking, smoking during pregnancy, and biological and psicosocial factors associated to smoking behaviour, the following chapters will be dedicated to an extensive review of attachment theory, maternal-fetal emotional bonding, adult attachment and its application to the study of smoking behaviour during pregnancy.

Chapter 4. Attachment Theory: a review of its origins and current developments

4.1 Origins of Attachment Theory

Originally, Attachment Theory was proposed by Bowlby (1982) to explain why children suffered both physically and psychologically when separated from their mothers. According to Holmes (1993), historically attachment theory was developed as an alternative to psychoanalytic theories of object relations in order to explain:

(i) why mere separation should cause anxiety;

(ii) the similarities between adult and childhood mourning; and

(iii) defensive processes (selective exclusion of signals from within and without that would normally be implicated in the activation of attachment behaviour) (Bretherton and Waters, 1985; Bowlby, 1980).

4.2 Main Features of Attachment Theory

The main features of Attachment Theory, summarised by Bowlby (1987) are:

4.2.1 Based on Lorenz's work with birds (Lorentz, 1952) and Harlow's studies of monkeys (Harlow, 1958), Bowlby postulated a "primary attachment relationship",

developing in the human infant at around seven months, whose main evolutionary function was protection from predators. This theory suggested that the mother-infant relationship is not necessarily mediated by feeding (secondary drive theory).

4.2.2 This attachment relationship is characterised by "proximity seeking", activated in young children by separation from the attachment figure, and in later life by threat, illness, or fatigue.

4.2.3 Attachment results in the "secure base phenomenon"; i.e. when the individual feels securely attached and, in infancy and early childhood, is in proximity to his/her attachment figure, he/she feels safe and can engage in "exploratory behaviour". There is a reciprocal relationship between the attachment figure and exploration.

4.2.4 Separation of an individual from his/her attachment figure leads to "separation protest", in which efforts, often angry or violent, are made towards reunion. Permanent separation, i.e. loss, leads to mourning and it impairs an individual's capacity to feel secure and to explore his/her environment.

4.2.5 The individual carries with him/her a map or "internal working model" of the world in which are represented the whereabouts and likely interactive patterns between him/herself and his/her attachment figures.

4.2.6 This "attachment dynamic" is not confined to childhood, but continues throughout life.

Other authors have also proposed the idea that development is not a movement from dependence to separateness but from immature to "mature dependence" (Fairbain 1952) or "emotional autonomy" (Holmes and Lindley 1989).

According to Lamb et al. (1985) this evolutionary biological model adopted by Bowlby emphasises the importance of natural selection in shaping the behavioural repertoire of any species, eliminating behavioural patterns that do not promote species' survival and spreading through the population behaviour that enhanced a species' success. Thus, in attachment dynamics, proximity or contact promoting signals are essential in humans and other terrestrial primate species; for instance, the infant's cry is a remarkable elicitor of adult responses, typically involving an offer to pick up the infant, which in turn is remarkably effective in terminating the infant's cry. The functional efficacy of such proximity or contact promoting signals depends upon the promptness and appropriateness of the adult's response; thus, mutual responsiveness and interaction become critical in humans and related species. Therefore infants become attached to individuals who consistently and appropriately respond to the infant's proximity-promoting signals and behaviours. Furthermore, in attachment theory, Bowlby suggested that adults are equipped with a repertoire of care-taking responses that complement the care-eliciting repertoire of the infant, and that are also the outcome of natural selection. From this

perspective, both human infants and adults are considered adapted to respond in mutually complementary ways that would function to promote infant survival.

In Bowlby's words (1980), "During the course of healthy development attachment behaviour leads to the development of affectionate bonds or attachments, initially between child and parent and later between adult and adult. The forms of behaviour and the bonds to which they lead are present and active throughout the life cycle".

Summarising a vast area of current attachment research, Ainsworth (1991) has also commented on how attachments develop from the very beginning of the individual existence and how attachment dimensions are present in subsequent relationships involving affectionate bonds. Attachment researchers have suggested that different classes of bond such as parent to child, with other kin, or to a sexual partner differ from one to another in regard to the role played by the attachment system and its interplay with other basic behavioural systems in the context of different developmental stages. Ainsworth (1991) stated that the development of attachments is always influenced by the biological context given by the developmental stage in which the individual is situated. The cognitive development experienced by the infant progressively allows him/her to grasp something of his/her parents' motivation and plans, and thus he/she becomes more able than before to induce the parent to change plans so that they more closely agree with his/her own. The further development of language skills and locomotion enables him/her to venture further away from his/her mother for longer periods and with less distress. This enables him/her to explore his/her expanded world, and to connect with a wider

variety of people, including strangers, especially age peers who play an increasingly significant role in a child's life. Each phase of the life cycle involves major shifts in functioning and in the ability to establish and maintain close relationships.

In Ainsworth's words (1991), "during adolescence there is a major shift taking place ushered in by hormonal changes and the onset of reproductive capacity. The young person shows increasing concern about the search for a partnership with an age peer, a relationship in which the reproductive system as well as the care giving and attachment systems are likely to be involved. There are also important cognitive changes such as the advent of the capacity of logical thought that will influence the manifestation of attachment patterns and coping strategies. So, attachment patterns are manifested in different ways in different developmental stages and relationships."

Another shift with clear biological underpinnings takes place in the case of women in the course of pregnancy, childbirth, and the period during which infants and young children are being reared. Ainsworth (1991) considers that in this case the need to rely on an attachment figure or figures for increased care is intensified, whether this be the partner in a sexual pair bond or, in the case of unavailability of such a partner, the woman's mother or another available attachment figure, or both.

Ainsworth (1991) also proposes that there would be a genetic bias for females throughout the course of development to be somehow more predisposed toward becoming attached and relying more on attachment figures than males. The evolutionary argument would

point out first that females are less physically strong than males, and not capable of the same speed in running. Therefore, in the environment of evolutionary adaptedness they were less able to protect themselves from environmental threats that are likely to occur. When the time came for pregnancy, childbirth and the rearing of young children, they were even more vulnerable to danger, especially because they have their offspring as well as themselves to protect. Thus, the implication is that they were less able than males to vest their security in themselves and their own capabilities, and thus more obviously reliant on others for support and protection. This would imply that the female is genetically biased to be both more attachment-oriented and more predisposed toward care-giving than males, even though the utility of such biases in our contemporary environment may not become apparent until pregnancy and its sequelae occur. At this juncture even the most capable of women would be likely to concede that support and co-operation in a shared enterprise would be helpful and welcome.

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Ainsworth also notes that the genetic bias for females to be more attachment oriented than males is not evident in infancy. Although male infants may tend to differ from females in such temperamental characteristics as activity level, and strength and vigour of movement, there is no evidence that they lag behind females in becoming attached to their principal caregivers or that attachment is less significant to them. Indeed this makes sense biologically, for in infancy males and females are equally in need of nurturance and protection.

The question about when and how such a genetic bias begins to manifest itself is still open to more research but is seems fairly clear that pregnancy marks a difference between females and males.

According to Bowlby (1969), attachment behaviour is observed under conditions of stress as any form of behaviour that predictably results in a person attaining or retaining proximity to some other preferred individual who is in a position to offer care-giving behaviour. Care-giving is commonly shown by a parent, or other adult, towards a child or adolescent, but is also shown by one adult towards another, especially in times of ill health, stress or old age. Although attachment behaviour is context dependent, and not all behaviour directed to a caregiver may be labelled attachment behaviour, it lies in the realm of direct observation. Bowlby viewed attachment behaviour as reflecting the activation of an inferred and not directly observable attachment behavioural system, distinct from and not dependent on other motivational systems, such as hunger or sex.

Bowlby (1969) also described how different behavioural systems could be activated simultaneously, leading to different outcomes depending on the nature of the behavioural systems activated. Some behavioural systems may be compatible, combining themselves in a sequence, others may be incompatible and interfere with each other in different ways: deactivation of one behavioural system when the other is activated; alternating behaviour; intention movements, combined behaviour and compromise behaviour. Probably the commonest outcome is the deactivation of one behavioural system when an incompatible one is activated; in some cases the behaviour that results when two

incompatible behavioural systems are active simultaneously is of a kind that suggests pathology (Bowlby, 1969).

One behavioural system may influence another behavioural system, forming an organisation of interconnected networks. Thus, activation of the wary system could activate the attachment system and deactivate the exploratory and sociable systems. These concepts were applied in a pioneering study in human infants by Bretherton and Ainsworth (1974) who described the behaviour of 1-year-olds in a Strange Situation in terms of the organisation of four behavioural systems: wary/fear, attachment, exploratory and sociable.

For an attachment behavioural system the biological function attributed to it is that of protection (in this case function is taken as a general term pertaining to three domains: protection from external dangers, preservation of internal states, and propagation of offspring). There is no reason why an attachment behavioural system should not function to promote survival in adulthood as well as in infancy, although the behavioural content may differ with age. Whereas the stimuli required to activate or deactivate a particular system, as well as the behaviour associated with a system, might change with age (in line with maturation of the central nervous system and the development of language and locomotion), interactions between systems might possibly remain similar in direction across ages. If so, then just as activation of an attachment behavioural system in infancy leads to deactivation of exploratory and sociable behavioural systems, so might it in adulthood. To the extent that care-giving involves reaching outward, it is likely that a

care-giving behaviour system also would be deactivated by arousal of an attachment behavioural system. This provides a framework for understanding the inadequate care-giving provided by mothers who lack a secure base from the past and/or present. Conversely, if an attachment behavioural system were not aroused, then a care-giving behavioural system should be available for activation.

In her overview of affectionate bonds across the life cycle, Ainsworth (1991) described what might be considered a goal of attachment behaviour in close relationships between adults: "This is a seeking to obtain an experience of security and comfort in the relationship with the partner. If and when such security and comfort is available, the individual is able to move off from the secure base provided by the partner, with confidence to engage in other activities".

4.3 Development of secure/insecure basic attachment categories

Mary Ainsworth devised the Strange Situation procedure that opened the gates for observing and classifying attachment in infancy and early childhood. She developed Attachment Theory and provided it with a sound experimental basis (Ainsworth, 1978). The basic categories of attachment patterns emerged from this experimental research, and all the subsequent studies in attachment in adults are related to them.

The Strange Situation procedure consists of a standard series of eight episodes. Infants are observed in an unfamiliar playroom, where they are given an opportunity to explore

toys as well as to interact with an unfamiliar adult in the presence and in the absence of the mother. The child's reaction to the separation and reunion with the mother is video-recorded, and later rated.

Following this procedure three typical patterns have been described:

i) The secure child, who protests when the mother disappears, and continues to protest on her return, but is easily pacified and soon returns to exploratory play.

ii) The insecure-avoidant child, who does not protest much on separation, and on the parent's return hovers warily nearby, unable to play freely.

iii) The insecure-ambivalent child, who protests, but can not be pacified by the returning adult, clings to his/her returning parent, buries his/her head in her lap and pushes away proffered toys.

The Strange Situation has become a standard test in developmental psychology. The proportions in the three groups vary in different cross-cultural studies, evidencing the influence of cultural context and temperamental factors, but typical north European figures are: Secure 65%, Insecure-avoidant 20%, Insecure-ambivalent 15% (Lamb et al., 1985).

More recently, a new dimension of insecure attachment called insecure-disorganized (or "D" attachment status) has been recognised (Main & Solomon, 1990). Children in this category "freeze" on separation, and seem unable to sustain any organised pattern of behaviour. This category usually corresponds to children subjected to severe neglect or abuse and reflects the significant negative impact of extreme adverse circumstances in the early years on cognitive and psychological development. This attachment pattern has also been related to the parent's unresolved traumatic experiences (Main and Hesse, 1990). They represent a small proportion of the insecure attachment group (around 4%).

4.4 The mother's contribution to the new relationship

The mother's contribution to the new relationship derives not only from her biological make-up, but also from a long history of interpersonal relations with her family of origin and from absorbing the values and practices of her culture (Bretherton and Waters, 1985). These accumulated influences will determine a specific pattern of attachment or "internal working models" in adulthood, which subsequently influences the quality of attachment relationships of the adult woman (Bowlby, 1982).

As a result of initial attachment experiences the infant develops models of the self, of others and of attachment relationships in general. These models or internal representations, then influence the formation of attachments for the remainder of the child's life (Bowlby, 1982; Bretherton, 1985; Main et al., 1985).

The importance of attachment does not end with childhood. Adolescents and adults ascribe meaning to their lives based on attachment relationships. Because of these relationships they gain a sense of security and place; without them, they feel lonely and restless (Muller, 1993).

Attachment is also a key element in the pregnancy experience of any woman, being a critical period in terms of eliciting the care-giving system in her, or at least its neurophysiological and psychological precursors. A review of the main neurophysiological and neuroendocrine components of maternal behaviour in mammals and humans is presented in the next section.

4.5 Neurophysiological and neuroendocrine correlates of early maternal behaviour

According to an extensive review by Keverne (1987), the central mechanisms underlying the neural and neuroendocrine determinants of maternal behaviour in animal models are divided into two main categories:

4.5.1 Nonspecific determinants: those which simultaneously address wide areas of the brain and lack any specific "coding" for maternal behaviour but are nevertheless essential for it to occur. The steroid hormones and rostrally projecting cathecholamine systems fall into this category. The steroid hormones may be viewed as primers, but not just for maternal behaviour, while the amines, specifically noradrenaline, act to synchronise a

variety of neural systems associated with maternal behaviour, an interaction with the oxytocin and b-endorphin peptidergic systems, which are the specific addressing systems, and enhancement of sensory signals and learning contingent upon parturition. Indeed, parturition is the physiological event which activates the noradrenergic system in the context of maternal behaviour in animal models.

4.5.2 Specific determinants: those which address restricted areas of the brain and may be viewed as specific to maternal behaviour. Their action is dependent on oestrogen priming and the noradrenergic synchronisation of other neural events in order for complete maternal behaviour to ensue. The oxytocinergic and beta-endorphin peptidergic systems fall into this category, promoting maternal behaviour and the neural reinforcement associated with this. In order to ensure specificity, these peptidergic systems may be inhibitory to potentially competing behaviours such as sexual behaviour and the reproductive neuroendocrine responses associated with it. Finally, as maternal behaviour progresses, other parts of the brain are called upon to co-ordinate the different behaviours that become associated with maternalism and ensure protection and feeding of the offspring. The suckling stimulus appears to be important for activating these neural systems by way of the peripeduncular nucleus.

From the biological perspective, maternal care includes all the activities of an animal which are directed towards the maintenance and support of offspring. Popular conceptions usually restrict such activities to mother-infant interactions, but a strict biological definition should include all energies expended from the moment of

fertilisation. In female mammals this includes not only such diverse forms of energy expenditure as occur in the building and provisioning of nests, the transfer of nutrients across the placenta, and the enlargement of mammary glands in readiness for lactation, but also the priming of neural systems so that certain primary behaviours such as maternal care, feeding and aggression are enhanced, while others such as courtship and sexual behaviour are suppressed.

Solid evidence in animal research has demonstrated the critical role of oxytocin and opioid peptidergic systems as well as the priming effect of oestrogen and progesterone on the expression of maternal behavior, (Keverne & Kendrick, 1994) and how these behaviours and selective maternal bond can be induced by vaginocervical mechanical stimulation or a specific oxytocin agonist in the ewe and goat (Kendrick et al., 1991; Romeyer et al., 1994), or even be blocked by a specific oxytocin antagonist (Keverne & Kendrik, 1994; Insel, 1997).

Klaus and Kennell (1976) proposed that human mothers would be physiologically primed at birth to manifest specific maternal behaviours and that there was a critical period early after the birth in which the amount of physical contact with the newborn would influence the quality and the strength of the relationship with the baby. Other authors such as Nissen et al. (1995) have measured plasma oxytocin levels in post-partum women, showing significant elevations 15, 30 and 45 minutes after delivery when compared with average pre-partum levels just before delivery. Oxytocin returned to pre-partum levels at 60 minutes post-partum. Although the oxytocin plasma levels were probably related to

uterine contractions and they did not measure brain oxytocin levels, these authors suggested that there is a sensitive period for bonding in women during the first hour after birth that coincides with high levels of oxytocin.

However, this hypothesis has not been confirmed in a series of studies (Herbert et al., 1982; Lamb, 1982; Myers, 1984; Hinde, 1982). No critical period of "imprinting " for the formation of a maternal-infant bond was demonstrated. Rather, the evidence showed that there was a gradual growth of reciprocal bonding which developed progressively from the early hours along branching pathways. This process was not irreversible and was open to a limited degree of retracing and re-negotiation.

Animal studies are of considerable importance in that they permit us to determine some of the ground rules underlying maternal behaviour but extrapolation to humans requires considerable caution because the neuroendocrine-behavioural coupling for maternal bonding and behaviour is clearly not the same in women. It would appear that, in women, the limbic mechanisms governing motivated behaviours are subservient to neocortical determinants (Keverne, 1988) and we might say, therefore, modelled by previous experiences and anything affecting normal neocortical functioning. There are women who can bond with an infant even without having experienced all the physiological changes of the pregnancy. This is a remarkable difference from other mammals in which those changes are critical to elicit maternal behaviour, but this does not necessarily imply that the psychobiological mechanisms involved in the process of bonding should be completely different, although, probably the influence of neocortical afferences appears

to be more crucial in humans. Kumar (1997) has reported the presence of a "maternal bonding disorder" in a group of women with post-natal mental illness and recollections of severe pain during labor, in which feelings of rejection or sometimes hate, begin immediately or very shortly after the birth, suggesting that the process of mother-to-infant bonding can be seriously disrupted in some women. Factors like personality traits or early childhood experiences were not strongly associated with the development of this bonding disorder; the more severe cases of bonding disorder were in women with severe mental illness which appears to be biologically determined. Based on studies on the role of peptidergic neural pathways in bonding processes, Insel (1997) has hypothesised that a defective oxytocin brain receptor could be the cause of deficits of maternal bonding in women who appear not to bond with their infants after normal deliveries. This is an open topic for further research.

4.6 Neurobiology of attachment behaviors.

Patterns of attachment can be inferred from an individual's response to separation and loss. Although this response is not the only indicator of the nature and quality of the attachment, it is one important indicator. Attachment system activation by separation induces an intense stress response with a severe disturbance of usual interrelationships associated with changes in the activity of several neurochemical and neuroendocrine systems. It alters basic cognitive processes and behaviour in Rhesus monkeys (Kraemer, 1997) and this is mediated by similar neuroendocrine interactions involving ACTH and

cortisol known or hypothesised to occur during major depressive disorders in humans, such as maintained high cortisol levels and low circulating ACTH (Levine et al., 1997).

All this is in line with the idea that the care-giver usually exerts a potent organising effect on the infant's psychobiology. The long-standing effects of care-giver deprivation might serve as a model for understanding some forms of human psychopathology, particularly if we consider the evidence gathered in human studies in which similar stress responses to separation in children and adults, as well as relationships between bereavement, mourning and depression have been reported (Bifulco et al., 1987; Sable, 1989).

Nachmias et al. (1996) have established the protective role of secure attachment in moderating physiological stress reactivity in pre-school children. They carried out neuroendocrine measures of stress activation (salivary cortisol) and observation of toddlers' behavioural inhibition using the Todler Behaviour Assessment Questionnaire (TBAQ) and the Cope Session. They also applied the Strange Situation Procedure. The first two evaluations were used to determine the temperamental inhibition of each subject and the Strange Situation was used to determine their Attachemt status. This study also provided evidence that temperament and attachment security are different constructs. The results established that temperamentally more inhibited 18-month-olds growing up in insecure attachment relationships may be at greater risk for experiencing elevated cortisol levels in situations that elicit inhibition. Thus, in little children the availability and behaviour of caregivers, according to the attachment relationship pattern, plays a decisive

role with respect to children's stress reactions to novel, strange situations, independent from their temperamental inhibition.

There is a considerable literature on the psychobiology of separation in animals and humans. Several authors have investigated the neurophysiology of attachment in non-human primates and its implications for attachment in humans (Boccia et al., 1991; Landenslager, 1988; Capitanio et al., 1986; Hofer, 1984; Reite et al., 1978). They have found evidence that the mechanisms involved in physiological and inmunological dysregulation due to the disruption of an attachment relationship in humans are the same as those found in non-human primate studies. Thus, they propose a model suggesting that human attachment evolved from the maternal regulation of the development of the infant observed in various non-primate mammals and extending through the other primates, wherein parental involvement with the developing offspring is long lasting, and where individual recognition and discrimination are the hallmarks of attachment. Some of these authors see no need to postulate essentially different mechanisms underlying the normal maturational development; rather, they prefer to suggest that the system responsible matures with the developing organism, and incorporates experiences which are appropriate for each developmental stage of the species. Some of the effects of early separation from the mother in primates may last into adulthood. The response to separation involves not only a dysregulation of multiple physiological systems representing a generalized dysregulation of autonomic function, with a relative parasympathetic predominance (Reite and Capitanio, 1985) but also a inmunologic depressive response which last several years after the separation (Laudenslager et al.,

1985) and impairment or alteration of adult socialization (Capitanio et al., 1986). Thus, both neurobiological development and alterations in experience might be expected to shape the final form of attachment.

Recent studies have established the critical role of peptidergic systems (such as oxytocin and vasopressin) in the central mediation of social attachment behaviours in terms of parental as well as pair-bonding and infant response to social separation in several mammal species including primates (Insel, 1997; Kraemer, 1997). Based on research on monogamous mammals, Insel (1997) has proposed a preliminary model to understand social bonding formation, which is the other essential component of attachment behaviour. This author conceptualises attachment as a social process and thus not likely to be defined by a single neurochemical pathway nucleus or represented in a single anatomical nucleus. Following Harlow's writings, he states that attachment includes several quite different processes depending on the social context: parent-infant, filial, and pair (male-female) bond formation are all forms of attachment. All these forms involve seeking proximity and all involve a response to separation, but the strategy for and the consequences of achieving proximity vary depending on the relationship. None of these forms of attachment is uniquely human, suggesting that the neural basis can be investigated in animal models. If these various forms of attachment use similar neural pathways then, biologically, attachment might be a singular process that is manifested in different behaviours depending on the external (e.g. social) or internal (e.g. endocrine) context. This can be experimentally tested using monogamous animal models in which long lasting pair bonding is present.

In humans, the role of temperament in determining attachment style has been the subject of intense debate for many years (Chess and Thomas, 1982; Kagan, 1984; Sroufe, 1985). In general, temperament is regarded as a constitutionally based predisposition that is stable across time and generalisable across situations. In several studies the temperamental dimension of irritability (low threshold to expression of negative affect) has been shown to influence the quality of mother infant interaction such that heightened infant irritability is associated with less maternal involvement (Van den Boom, 1994). Kagan (1984) has argued that avoidant, secure, and resistant attachment groups reflect temperamental responses to the Strange Situation assessment. Several authors have sustained that irritable children would develop an insecure resistant attachment style (Miyake et al., 1985; Chess and Thomas, 1982; Goldsmith and Alansky 1987). However, this asumption has been challenged by Van den Boom (1994) who has found that there is a more complex process than a direct pathway between neonatal irritability and resistant insecurity in the Strange Situation Procedure. According to this author, neonatal irritability seems to be a general disposition that may predispose infants who are at risk for insecure relationships to develop insecure attachment, but is not directly predictive of type of insecurity. Infant irritability seems to be an influential condition in the relationship between mother and infant during the first year of life and makes it difficult for the mother to adjust her behaviour to the child's disposition. Other authors (Belsky and Rovine, 1987; Thompson and Lamb, 1984; Calkins and Fox, 1992) have also described different temperamental types within the attachment classification, supporting the idea that temperamental disposition does not necessary determine the attachment

pattern. Thus, attachment and temperament are not overlapping constructs, but are complementary and in a dynamic relationship. Therefore, it is possible to find temperament differences within attachment groups which may account for the wide variability of combinations that could influence interaction with the mother. Nachmias et al. (1996) have demonstrated the influence of secure attachment in moderating temperamental dimensions such as behavioural inhibition and stress reactivity in 18 month old children by means of establishing temperamental inhibition using the Toddler Behaviour Assesment Questionnaire and a standardised Cope Session, and observing the same children in the Strange Situation Procedure. Van den Boom (1994) has reported how an early intervention to improve the quality of maternal-infant interaction can improve children's security of attachment, irrespective of their adverse temperamental features. This author performed an experimental intervention to improve sensitive responsiveness among lower-class mothers with six month old irritable infants in order to improve quality of mother-infant interaction, infant exploration, and attachment. There were two experimental and two control groups. The intervention was not psychotherapeutic but a mothering/skill based one, it lasted three months and ended when the child was nine months old. There was an improvement in all the tested variables in the intervention group dyads, particularly in the proportion of securely attached children at 12 months of age. This research gives support to the idea that attachment patterns are founded in early interaction with the mother and that internal factors (genes and temperament) as well as external factors (psychosocial interaction) play a dynamic role in shaping the internal working models of attachment during subsequent stages of development. Good and bad experiences along the life cycle, particularly in the years of

immaturity (infancy, childhood and adolescence) can reshape the individual's approach to attachment relationships and therefore change internal working models in an negative or positive way (Ijzendoorn, 1995). Bolwby (1973) has emphasised the sensitivity of attachment to environmental changes during the first five years of life and even during the decade after the fifth birthday, although in steadily diminishing degrees, but still labile enough to allow life events, experiences and therapy to provoke changes in the course of attachment development in a positive or negative way (Egeland and Farber, 1984; Rutter et al., 1990; Bowlby, 1988).

4.7 Social support and attachment

There is evidence from animal and human studies about the role of social support in moderating the effects and consequences of separation. Social relationships may exert their effects by promoting important regulatory influences on social organisms, as demonstrated in mother-infant relationships in rodents (Hofer, 1981), non-human primates (Caine and Reite, 1981; Boccia et al., 1994) and humans (Nachmias et al., 1996; House et al., 1988; Kamarnuk et al., 1990). It has been suggested that the adverse consequences of separation and loss are attributable to the withdrawal or loss of regulatory influences intrinsic to the relationship (Hofer, 1984).

The role of the attachment system in this buffering effect is supported by empirical evidence in non-human primates in which the moderating effect of alternative social relationships to separation or loss depends on the presence of previous attachment to the

substitutes (adoptive mothers or peers) (Reite and Sneyder, 1982) and characteristics of the environment which allow the infant to develop "secure" attachment to the mother or to alternative attachment figures (Bocia et al., 1991; Rosemblum 1987).

These observations are consistent with social support studies in human subjects such as that of Brown et al. (1986) in which the role of social support in altering the risk of depression related to stress (usually loss) in a cohort of 400 working class women was examined. They found that only "core" as opposite to "non-core" relationships were helpful in diminishing the risk of depression, indicating that it was not so much the presence of support as the kind or nature of support that was the critical variable. In this study a "core" relationship was similar to what we might consider an attachment relationship, such as the marital relationship. A "non-core" relationship (for example, with a neighbour or an acquaintance) does not include elements of attachment.

4.8 Role of smoking as a coping strategy for stress in women

The use of tobacco smoking as a coping mechanism for stress in women in deprived social conditions has been discussed in previous chapters, and it could be understood as an alternative strategy to deal with adverse conditions of daily life, which usually include lack of social support and lack of attachment relationships or the ability to build them. The pharmacological effects of nicotine and the unrestrained availability of cigarettes are probably significant reasons for these women to use smoking as a coping mechanism. In this study the possible association between smoking during pregnancy and patterns of

attachment will be explored, based on previous reports which seem to point towards this link.

According to the HEA qualitative study (1996) women who are able to stop smoking during pregnancy are those who have a good supportive relationship, without financial pressures, and higher levels of self-esteem. Contrasting with this, women who continue smoking during pregnancy usually have a difficult, or no, relationship with a partner, financial pressures, an unplanned pregnancy and live in a smoking environment. This is consistent with the hypothesis articulated by Bowlby (1981) regarding the central role of attachment patterns in determining individuals' resilience to stress. Although no specific assessment of attachment was performed in these women, smokers seemed to be insecurely attached and women who stopped smoking appeared to be in a secure attachment relationship with their partners. These findings are also consistent with the central hypothesis of this study which states that secure attachment will protect against continued smoking in pregnancy. It could be hypothesised that mothers with a secure attachment pattern of relationships will be able to develop an emotional bond with their babies even before the birth and conversely, mothers with insecure attachment could be less able to do so and less able to express their concern for the baby's well-being by changing specific behaviours known to be risky. However, the developing of an emotional bond with the baby-to-be and concern about the well-being of the fetus is a common feature in most mothers. This emotional bond has been named "maternal-fetal attachment" by several authors who have also developed scales to measure it (Crawnley, 1981; Muller, 1993; Condon, 1993). The next chapter will be dedicated to a review of the

main features of this maternal-fetal emotional bonding which will be one of the central dimensions of this research into pregnant women who smoke.

Chapter 5. Maternal-fetal emotional bonding.

From a psychological perspective, the emotional bonding that develops between an expectant mother and her fetus during pregnancy has some unique features. A woman initially becomes attached to the idea of being pregnant and gradually develops an bonding for the individual child inside her (Rubin, 1984). So, maternal-fetal emotional bonding gradually develops from the first trimester, reaching its peak at the end of the third trimester. Previous research about this particular type of bonding is discussed below.

Several authors have named this particular kind of bonding as Maternal-fetal "attachment" and it has been defined as "the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child" (Cranley, 1981; Grace, 1989) or "the unique, affectionate relationship that develops between a woman and her fetus" (Muller, 1993). Condon (1985) proposed a common ground of five relevant characteristics of maternal-infant "attachment". First, a desire to know or understand or define the object of attachment. Translated into an ante-natal time framework, this would correspond to seeking information about the fetus to clarify one's mental picture of it. Second, contact or interaction with the object is associated with pleasure. In the case of the unborn child, this would involve enjoyment from palpating

the fetus, feeling its movements, having monologues with it, etc. Third, actual or fantasised separation or loss of the object is associated with pain. Antenatally, this would correspond to fantasised termination, miscarriage, stillbirth or deformity, the later representing the loss of a fantasised normal baby. Fourth, "attachment" always involves a concern for the well being of the object, i.e. a desire to protect it and satisfy its needs. According to this author, protection is probably the foundation for attachment to exist and antenatally would correspond to abstaining from known potential embryotoxins (alcohol, nicotine, drugs, etc.), catering to fetal needs would be represented by a concern about diet, avoidance of excessive physical and mental distress levels, and participation in appropriate antenatal care. Fifth, the need to protect the object may override concerns for the well being of the self. This altruistic dimension of "attachment" may equate with the sacrifices in the interest of fetal well-being, inherent in the behaviors listed above.

Condon's definition of maternal-fetal "attachment" may lead to confusion because the last two points actually refer to the care-giving behaviour system in terms of the primary concepts of attachment theory (Bowlby, 1982). As discussed earlier, Bowlby and others like Hinde (1982) maintained that care-giving behaviour and the attachment behavioural system are two separate systems although they are closely linked in a complementary way, and both are represented in corresponding internal working models. There are other authors, however, who believe that the care-giving system is an integral component and direct product of the attachment system, particularly in adult attachment. They base this assumption on first, the concept of reciprocity and interchange between the care-giving and attachment roles in functioning adult marital and sexual relationships; second, the

similarity of the emotional experiences associated with attachment and care-giving and third, the systemic interdependence between both attachment and care-giving systems (Berman and Sperling, 1995). Internal working models are shaped in interaction with primary attachment figures and influence the development of new attachment relationships during the life cycle. Internal mental representations include models of both parent and child roles as experienced by the individual in childhood. Thus, a woman, even prior to parenthood, "knows" the maternal role learned from her own mother. As a parent, there is a tendency to play the maternal role and to replicate her childhood experience with her own child. From the biological point of view, as discussed in the review of animal models, different expressions of attachment are mediated by the social context, and the context of pregnancy is a very specific one in which the object of the attachment develops from the women's own body. The diverse attachments of any individual are closely related in their origins either from their neurobiology or their social and environmental context. Thus, we may expect that the quality of the mother's typical adult attachment pattern will be closely related to the quality of the care-giving she is able to develop with the baby-to be.

5.1 Maternal-fetal bonding studies

From a theoretical perspective, parental-fetal emotional bonding provides an opportunity to study the development of the care-giving system in "pure culture", uncontaminated by factors such as infant temperament and the complexities of the post-natal environment. Over the course of pregnancy, both parents normally acquire an increasingly elaborated

internalised representation of the fetus. This comprises a curious mixture of fantasy and reality, the fetus being a recipient par excellence of projection. It is to this internalised image that the emotional tie develops (Condon, 1993).

From a clinical perspective, the framework of antenatal emotional bonding to the fetus is of considerable assistance in understanding and managing many of the psychological problems of pregnancy and the post-natal period. These include normal and pathological reactions to loss, via miscarriage, perinatal bereavement or relinquishment for adoption. Other areas in which an attachment perspective has been proposed to be helpful include early bonding difficulties, fetal abuse, psychological symptom formation during pregnancy, and psychological reactions to antenatal diagnostic procedures (Hedrich and Cranley, 1989; Condon, 1987; 1993).

Previous research on antenatal emotional bonding was performed by Lumley (1972) who interviewed 30 primiparous women during first, second and third trimesters regarding their "mental picture" of the fetus and found that it was conceptualised in increasingly human terms over the course of time. Liefer (1977) published a prospective study of antenatal emotional bonding in 19 primiparous subjects. He found that 25% had little or no bonding to the fetus at the end of pregnancy, and this subgroup was still less emotionally bond to the infant at seven months postpartum. However, the method of assessment of prenatal emotional bonding was not clearly specified. Cranley (1981) published a 24-item self-report questionnaire for assessing maternal-fetal emotional bonding, the Maternal Fetal "Attachment" Scale (MFAS). This instrument has been used

in a number of studies over the last decade confirming that "attachment" scores increase from the beginning to the end of pregnancy and quickening correlates consistently with development of maternal prenatal emotional bonding (Muller, 1993; Heidrich and Cranley, 1989). Although associations of maternal-fetal "attachment" have been reported with variables like ultra sound examinations (Fletcher and Evans, 1983; Milne and Rich, 1981), compliance with medical recomendations (Reading et al., 1982) and genetic amniocentesis (Silvestre and Fresco, 1980) these associations have not been confirmed in later studies (Heidrich and Cranley, 1989; Grace, 1984). The MFAS has been criticized on grounds of validity because it may not actually reflect its own definition of prenatal "attachment" (Muller, 1993) and for its inadequacy in discriminating between attitude to the fetus per se versus attitude to the pregnancy state or motherhood role (Condon, 1993). More recently, Condon (1993) and Muller (1993) independently have developed their own scales to assess maternal-fetal "attachment" (emotional bonding to the fetus) more specifically.

One of the associations that has been interesting to review, having in mind the altruistic dimension of Condon's (1993) construct of maternal-fetal "attachment", is abstinence from smoking, drinking and the use of any embriotoxic substance during pregnancy. However, scale scores in subgroups of consumers versus abstainers showed contradictory results in the only two publications available: Condon and Hilton (1988) reported that antenatal emotional "attachment" to the fetus is a significant predictor of extent of decrease in drinking, but not of smoking, during pregnancy. Women who had feelings of irritation towards the fetus showed a smaller reduction in their alcohol consumption and a

smaller decrease in cigarette smoking than did those who did not have these feelings. They concluded that in the case of smoking, some other factor than maternal-fetal emotional bonding is determining the behaviour, such as nicotine dependence. However, the same research group in a later study (Hilton and Condon, 1989) reported that in a sample of 40 pregnant women, although alcohol drinkers were far more successful in their attempt to quit than cigarette smokers, in that 85% of drinkers bettered their target behaviour (in terms of consumption), while 53% of smokers failed in their attempt, there were no single maternal-fetal "attachment" item related to reduction in alcohol intake, and there were some weak relationships between maternal-fetal emotional bonding and smoking. These authors commented that the most striking finding in the study was the disparity between women citing factors that influenced their behaviour and how they actually behaved. Women could identify reasons which influenced their smoking and drinking behavior during pregnancy, such as concern about harm to the baby, strong will-power and the doctor's and spouse's advice. For smokers in particular, the amount of emotional bonding to the unborn child appears to be important as well. However, endorsement of a particular reason does not appear to relate to actual consumption, and a major disparity between health beliefs and actual behaviour was apparent. The authors explained the differences between studies due to methodological limitations such as small sample size.

Hilton and Condon (1989) also commented that disparity between attitudes and behaviour is not new in the field of primary prevention. Little et al. (1981) reported that although 90% of respondents in their study stated that drinking might be harmful to the

baby, only 25% felt women should abstain during pregnancy. Psychological theories about influencing attitudes and changing behaviours are complex, but they emphasise that the link between attitudes and behaviour is a weak one, complicated by cognitive, dynamic, social learning and attributional factors (Hilton and Condon, 1989).

These contradictory results mean that there are still questions about associations between smoking and drinking in pregnancy and maternal-fetal emotional bonding. In follow-up studies both smoking in pregnancy (Holsclaw and Topham, 1978) and insecure attachment in infants (Sroufre, 1983; Troy and Sroufe, 1987) have been reported to be associated with poor behavioural and cognitive outcomes of the offspring. Nevertheless, the possible link between smoking and insecure attachment has not so far been directly explored. Variables associated with poverty or adversity in women who continue smoking during pregnancy are certainly also stressful conditions which may increase the possibility of disturbance of the early bonding relationship with the baby. Thus, such factors should be controlled in any analysis of maternal attachment patterns and smoking in pregnancy.

Demonstration of a relationship between continuing to smoke in pregnancy and insecure patterns of attachment may provide a new approach in the assessment and treatment of this prevalent condition.

According to authors who have found evidence that there is a trans-generational transmission of attachment patterns from the mother to the baby (Benoit and Parker,

1994; Fonagy et al., 1991; Levine et al., 1991), one can expect that the presence of an established adult attachment pattern of relationships in the mother-to-be will be a critical variable which determines the way in which she develops an emotional bonding to the baby before and after the birth. For this reason, an assessment of the adult attachment pattern in the pregnant woman is an essential part of this thesis. Already established adult attachment patterns may be more sensitive and reliable in discriminating pregnant smokers from non-smokers than maternal-fetal emotional bonding which will be changing over time and sensitive to other factors influencing the pregnancy. According to the previous review of maternal-fetal emotional bonding, we know that this construct is based more in the care-giving system than the attachment system. Although we believe that there is a close relationship between both systems, they do not necessarily express the same behavioural dimensions. In addition, this emotional bond is built throughout the pregnancy in a dynamic process in which several factors are involved.

In order to explore the dimensions of attachment in adults and select the more appropriate theoretical construct for this thesis, a review of adult attachment is carried out in the next chapter.

Chapter 6. Adult Attachment

6.1 Origins of adult attachment

Adult attachment is the result of early interactions with the maternal figure and other significant adults during early stages of psychological development, and it reflects the internal and social context in which this interaction took place, plus all the, temperamental, social and environmental influences shaping the individual's experiences in relationships during his/her development along the life cycle. Empirical research using the Strange Situation procedure has shown that it is already possible to identify patterns of attachment in children at one year of age, and that this pattern of attachment tends to remain stable if general conditions remain stable in follow-up studies (Main and Cassidy 1988; Grossman and Grossman, 1991; Elicker et al., 1992). However, the individual's attachment status which is acquired during the early stages of childhood is susceptible to environmental circumstances, and thus could be modified if environmental circumstances change over time (Holmes, 1991). Authors like Waters (1978) and Main and Weston (1981) have demonstrated a good level of stability in attachment classifications over a 6-month period follow-up, however, this stability has not been replicated with equal strength by others such as Vaughn et al. (1979) who found only a 62% concordance in attachment classification in the same subjects and Thompson et al. (1983) who found only a 58% stability between classifications. Other follow-up studies (Erickson et al. 1985, Egeland and Farber, 1984) have shown that differences in attachment classification over time are associated with positive or negative changes in the quality of maternal

care-giving. Thus, children classified secure at 12 months may present behavioural problems at a later age if their mothers become less supportive, less warm and encouraging, and less able to structure tasks or set limits (Erikson et al., 1985). Egeland and Farber (1984) have suggested that although care-giving skills are critical in the early formation of a secure attachment, a mother's personality and affective characteristics play an increasingly important role in the maintenance of this security as a child grows older. Stressful life events are associated with changes in the attachment behavioural system only if they are associated with changes in the quality of care-giving (Frodi et al., 1985). This dynamic feature of attachment style is important to consider for eventual interventions in a clinical setting. However, it is important to consider that evidence from non-human primate models has shown that particular adverse environmental conditions produce negative effects on the normal development and attachment formation that tend to remain despite positive changes in the environment (Laudenslager et al., 1985, Capitanio et al., 1986). Erickson et al. (1985), in their study of changes in children's attachment patterns, concluded that shifts in parental sensitivity and competence did not prevent the effects of adverse earlier experience altogether; instead they suggested that despite improvements in the quality of care giving, insecurity in infancy and early childhood may leave some vulnerability for quite some time. Similarly, they suggested that securely attached infants who experienced later deterioration in parental care-giving should be able to recover more quickly once their attachment relationship becomes supportive again. There are naturalistic observational studies in human communities under extreme adverse circumstances, such as chronic and unremitting starvation, in which the development of parent-offspring bonds is severely disrupted, not allowing

attachments to develop within a culture, with devastating consequences for all individuals in that community (Turnbull, 1972; Scheper-Hughes, 1992). These studies suggest that in humans the formation of attachments can be prevented or severely disturbed by environmental adversity which affects the quality of care-giving. Thus, the possibility of recovering from a disturbed attachment will also depend on the cultural setting and duration of the adversity.

Authors like Pearson et al. (1994) have adopted the notion of "earned" security in adult attachment status which might be "earned" by means of engaging in positive relationships along the life span, for example after marrying a supportive partner (Van Ijzendoorn, 1995). In his study of security of attachment and its relation to depression and parenting style, Pearson reported that 20 out of 30 secure participants could be considered "earned secure". Longitudinal studies in which continuity of attachment style have been assessed in subjects at 1 year old and during adolescence have produced very different levels of concordance between both evaluations. In one study in which the level of concordance was insignificant, adverse life events such as divorce and life-threatening illness of parents appeared to be associated with insecure adolescent attachment representation (Zimmerman, 1994, cited in Van Ijzendoorn, 1995). In Hamilton's (1994) study the stability of attachment classification across a 17-year period was 77%. They concluded that continuity of attachment was associated with stable negative or stable positive family circumstances. Insecurity in attachment was associated with families characterised by marital dissolution, family violence, persistent parental substance abuse or financial stress. Waters et al. (1995) found a 70% concordance in attachment

classification in their 20-year longitudinal study of attachment in 50 subjects. Instability in attachment was strongly related to major negative life events such as parental loss, abuse, or serious illness.

Lewis et al. (1984) in their work about predicting psychopathology from early social interactions have proposed that measures of attachment style taken at a particular point in time might best be conceptualised as reflecting the interaction between early attachment (or working models) and current environment, not just the manifestations of one factor or the other, and that positive or negative early experiences may predispose a child to be more resilient or not to later changes in attachment relationships. Sroufe et al. (1990) provide additional evidence in this respect. They found that when two groups of children, originally classified as secure or insecure in the Strange Situation procedure, both evidenced poor adaptation in the preschool years, a significant positive change in functioning in elementary school was experienced by those with more secure early attachment histories. They concluded that adaptation is always a product of both developmental history and current circumstances.

6.2 The role of temperament in attachment formation

Several authors have maintained that there is a role for the individual's temperament in terms of facilitating or interfering with the establishment of normal attachments (Kagan et al., 1994). Van Ijzendoorn (1995a) has indicated that temperament may have a role in bridging the "transmission gap" between parent's attachment representations and their

infant's attachment. This assumption is based on some empirical evidence in which the role of parental sensitivity and the parent's sensitive behaviour towards their children has been found to be associated with parental attachment representations (Van Ijzendoorn, 1995b). Notwithstanding, Van den Boom (1994) reported that an early intervention to enhance mothers' sensitive responsiveness to their babies significantly improved outcome in terms of quality of mother-child interaction, infant exploration, and security of attachment of infants selected according to temperamental and environmental risk factors and compared with matched control groups. There is good evidence that under favourable conditions the effect of temperamental risk factors, such as irritability, can be diminished or neutralised by: maternal personality and maternal behaviour (Magelsdorf et al., 1995), family factors such as marital quality (Belsky et al., 1991) or by therapeutic intervention at an early stage (Van den Boom, 1994). The role of temperament as an influential factor seems to merge with all the other fundamental variables involved in psychological development in a dynamic way. The achievement of secure attachment will depend on a mixture of good parental, infant, family and environmental assets in a dynamic interaction (Belsky et al., 1996).

In a review of the effects of adverse childhood experiences, Bowlby (1982) concluded that there are at least two ways in which such experiences can disturb normal psychological development: first, they make the individual more vulnerable to later adverse experiences, and secondly, they make it more likely that he or she will meet with further such experiences. Whereas earlier adverse experiences are likely to be wholly independent of the agency of the individual concerned, later ones are likely to be the

consequences of his or her own actions, actions that spring from those disturbances of personality to which the earlier experiences have given rise. Consistent with this, Rutter (1979) concluded "people brought up in unhappy or disrupted homes are more likely to have illegitimate children, to become teenage mothers, to make unhappy marriages, and to divorce".

Current research supports the view that an important factor influencing the development of a stable attachment pattern in the infant is the previous attachment pattern of the mother (Steele et al., 1996). The development of measures of adult attachment over the last twenty years has allowed several researchers to demonstrate intergenerational transmission of attachment. The adult attachment instrument most often used for this purpose has been the Adult Attachment Interview (AAI) developed by George et al (1985) to assess internal representations of attachment in adults. Some of the more relevant findings of research in this field are reviewed below.

The strong relationship between maternal representations of attachment and the organisation of infant-mother attachment at one year of age using the Strange Situation Procedure has been demonstrated in cross-sectional and prospective studies, showing that it is possible to predict the attachment pattern of the child in the Strange Situation with a good level of concordance from results of the AAI with the mothers (Fonagy et al., 1991; Steele et al., 1996). Several studies support the idea that patterns of attachment are transmitted across generations and that there is a direct relationship between the internal models of attachment of the mothers and the pattern of attachment shown by their

children (Riks, 1985; Main et al., 1985). Benoit and Parker (1994) showed that even across three generations there is good concordance of attachment patterns amongst daughters, mothers and grandmothers. They assessed attachment in mothers using the AAI during pregnancy and when their infants were 11-months old, they also assessed grandmothers at any time of the study, and the infants using the Strange Situation at 12 months. They found a 90% stability in the AAI classification in mothers over a 12 months period, an 81% concordance with infant's classification using a three category model, and a 75% concordance of grandmother-mother-infant using the same three category model. In a review of the transmission and stability of attachment Van Ijzendoorn (1995) reported that stability of attachment pattern in several follow-up studies from the first year of life until late adolescence and adulthood is related with stability of family and social environment, irrespective of temperamental influences.

This intergenerational transmission of attachment is particularly relevant given the consequences that attachment patterns have for the individual. Cronwell and Feldman (1988) reported that the behaviour of mothers in a play session is strongly associated with their attachment internal model, and that children's behaviour in a problem-solving session in interaction with their mothers corresponded with the mothers' internal models of attachment. Thus, it was possible to predict the attachment classification of the mother by scoring the mother and children's behaviour during the play session and the children's behaviour matched the attachment classification of their mothers even when the effects of mothers' behaviour was controlled for. These results supported the suggestion made by Main et al. (1985) that a mother's internal model of relationships selectively and

qualitatively affects her responsiveness and sensitivity to her child. Mothers classified as secure functioned best overall, they showed warmth and supportiveness during a challenging activity and gave clear, helpful assistance that encouraged learning and mastery in their children. Mothers classified as detached were less emotionally supportive and helpful to their children. They often had a controlling, task-focused style which tended to be cool and remote, not focused on learning but on task completion. Mothers in the preoccupied group were also not helpful and supportive to their children. They tended to have an inconsistent directive style making their children feel confused and overwhelmed.

In addition to findings linking retrospective views of childhood attachments to later parental behaviour, a number of intergenerational links between quality of early attachment experience and quality of later marital relations have been documented. Ricks (1985) reported that separation or disruption of primary attachment relationships in childhood predicted later marital disharmony or marital status. These findings are in line with the idea that early patterns of attachment of infant to mother subsequently influence different kinds of attachment relationships depending on the life cycle's developmental stage. Therefore, attachment dimensions should be amenable to being evaluated in different life contexts and we should expect, according to Bowlby (1982) and in light of the evidence reviewed above of a tendency of attachment patterns to remain stable if social and environmental condition also remain stable, that they remain stable over time. This is particularly relevant to this study because, in our sample of pregnant women we

assessed several attachment dimensions in order to obtain a more comprehensive picture of their attachment systems in studies 3 and 4.

There are no studies looking at maternal internal models of adult attachment and behaviour during the pregnancy. The only exceptions are those already reviewed in the section above on maternal-fetal emotional bonding and smoking and drinking behaviour where results have been inconclusive. However, although related, maternal-fetal "attachment" (emotional bonding to the fetus) and the maternal representation of adult attachment are different constructs. The purpose of this thesis is to explore the association of maternal patterns of adult attachment and current unhealthy behaviours during pregnancy

After this review of transmission and stability of attachment, the next section is dedicated to adult attachment, which is one relevant variable to be evaluated in our study and one of the central points of our hypotheses regarding smoking in pregnancy.

6.3 Attachment in adults

An adult's attachment pattern is the final product of a developmental pathway which started at birth (or even before), then formed in the context of early mother-infant interaction and was further shaped by accumulative experiences involving social and environmental influences throughout the life span. As stated above, adult attachment patterns represent internal working models of relationships which influence the way an

individual's personality is built and maintains relationships with significant others. As in the infant, the role of an attachment relationship in the adult is of protection and security, particularly in situations of stress. In the infant, the psychobiological regulating role of an attachment relationship has been well established and the qualities of an attachment relationship can be easily elicited and measured in laboratory and naturalistic conditions by direct observation of specific attachment behaviours such as in the Strange Situation procedure. However, as the individual grows, social and cognitive development enables her/him to develop and refine coping mechanisms to deal with stressful situations in a variety of ways, so that specific attachment behaviours become less evident than in small toddlers.

In an attempt to describe how the basic characteristics of attachment evolve and become a pattern of relationships in adulthood, Weiss (1993) has summarised the characteristics of attachment relationships both in infants and in adults. According to this view, three basic characteristics have been proposed as distinguishing attachment from other relational bonds: proximity seeking, secure base effect and separation protest. Weiss (1993) also proposed five other properties of childhood attachment that can be identified: Elicitation by threat (anxiety makes attachment feelings and behaviour to be displayed); Specificity of attachment figure (even though other figures may provide companionship, the attachment system seems to require the particular figure it has already incorporated); Inaccessibility to conscious control (attachment feelings and separation protest persist despite recognition that the attachment figure will not be available anymore); Persistence (attachment seems to persist in the absence of reinforcement and it does not wane); and

Insensitivity to experience with the attachment figure (attachment seems to persist even if the attachment figure is neglecting or abusive).

According to Bowlby's ideas and findings regarding the persistence of emotional bonds in divorced couples, Weiss (1993) suggests that certain relationships maintained by adults appear to possess the properties of childhood attachment, although manifested in other ways. The most commonly relevant relationships observed in Western cultures are: pair-bonds of adults, parents' emotional investments in their immature children, relationships with parents maintained by some adults in which the parents continue to be seen as guarantors of security, and relationships of patients with counsellors or therapists. However, not all pair bonds, parental relationships or relationships of patients with therapists, are attachments, nor is it impossible for friendships, work relationships, or kin ties to be attachments. Some of these relationships are likely to be attachments while others are unlikely to be so. The question is whether the relationship displays attachment properties or not.

Relationships in which the development of attachment bonds will be more probable in adults, as well as how the evidence of attachment bonds is emotionally expressed seem likely to be determined by social arrangements in the cultural context. However, no matter what the nature of those social arrangements is, it seems likely that some relationships of adults will display properties of childhood attachment. Thus, it is possible for an adult to have attachment components in more than one significant relationship. Some authors such as West and Sheldon (1994) consider that the main

attachment figure in adult life is the sexual partner and they have developed specific instruments to evaluate the attachment quality in this relationship. Others, such as Bifulco et al. (2002) consider that attachment can be part of other close relationships with significant others, and they have also developed instruments to evaluate the attachment pattern in adults. In any case, there are a variety of ways to evaluate attachment in adults developed by different authors according to their specific field of research. A review of the different adult attachment evaluations will be made in the next chapter.

There are of course differences between these adult attachment relationships and the attachment of children, for instance in the extent to which the attachment figure is seen as wiser and stronger. Only in persisting childhood attachment to parents and in relationships with counsellors and therapists do adults view the attachment figure as always wiser and stronger than them. There are differences, too, in the nature of the threat that elicits attachment behaviours and feelings. In all relationships that have attachment properties, contact with the attachment figure may be sought if there is threat to the self, threat to the attachment figure or threat to the relationship. In childhood-like attachment and in adult relationships with therapists and counselors, it is threat to the self that seems most often to elicit attachment feelings and behaviours; in parents' relationships with their immature children, it is threat to the other. In the pair-bond it can be any of the three, but often enough it is threat to continuation of the relationship that elicits attachment feelings and behaviours.

Despite these differences, there are several arguments to support the view that adult attachment is a development of the primary childhood attachment bond. According to Weiss (1993) there are three arguments that would seem to be of special weight: First, the similarity of emotional experiences. Aside from the choice of attachment figure, the kind of relationship to attachment figure and nature of the triggering threat, the feelings associated with the arousal of attachment are alike. This is particularly evident from the observation of response to loss of the attachment figure in children and adults. Second, the generalisation of experience. It would appear that emotional elements which have become associated with childhood attachment are expressed in adult attachments. In particular, evidence is mounting that children who lose confidence in their parents as attachment figures, are likely to have difficulties in pair bonding because of distrust of their parents. No such effects are seen in their work relationships (Wallerstein and Blakeslee, 1989). The third argument to support the idea of continuity of attachment is the temporal linkage: adult attachments in the form of pair bonding and parental attachment would appear only after parents have largely faded as attachment figures. This is consistent with the idea that adult attachment is a later stage of the childhood attachment system.

It could be held that there is no special attachment system in adults, but only a general tendency to form relationships which is exhibited in any relationship. They may vary in closeness, in trustworthiness, in the extent to which they elicit feelings of protectiveness, and in still other ways, in which the differences are rather quantitative instead of anything qualitatively different about attachment relationships.

Against this alternative theory there is evidence that independent contributions to well-being are made by adult attachment relationships that are different from those made by work colleagues or acquaintances or kinship ties. And the converse is also true: relationships of community, such as relationships with work colleagues, make contributions to well-being different from the contributions made by attachment relationships (Henderson et al., 1981). There is also evidence about the connection between attachment relationships in childhood and adulthood in follow-up studies in which a good relative stability of attachment patterns from childhood to late adolescence and adulthood has been demonstrated (van Ijzendoorn, 1995).

All attachment relationships whether in childhood or adulthood appear to be critical to continuing security and to the maintenance of emotional stability. However, differences in the relative contributions of pre-existing mental representations and current interpersonal processes to the development of the attachment system is an important issue when observing and measuring attachment in different developmental stages. In infant-adult attachment, the infant has little prior history of attachment, so he or she initially contributes primarily interactional and temperamental aspects to the attachment bond. In adults, the presence of mental representations derived from prior experience greatly influences how one behaves with the potential attachment figure and how one experiences the other's behaviour. In addition, the care-giver and care-seeker attachment roles are interchangeable in adults, whereas in healthy adult-infant attachment they are fixed and stable. The evaluation of attachment in adults is therefore more complex and

can be carried out from different perspectives according to the dimension that the researchers want to explore.

A variety of measurements of adult attachment have been developed over the last two decades in order to study the complexities of attachment relationships in adulthood. The more relevant instruments for adult attachment assessment at the time of the studies will be reviewed in the next chapter.

Chapter 7. Adult attachment assessments.

Research on attachment theory has addressed different aspects of Bowlby's original theory and the techniques of measurement and nature of the conclusions depend on which aspect of the theory has been addressed by the investigators. It is necessary to establish a working definition of attachment in order to determine what are the relevant dimensions to be assessed in this research. One possible working definition might be that Adult Attachment is the stable tendency of an individual to make substantial efforts to seek and maintain proximity to and contact with one or a few specific individuals who provide the subjective potential for physical and psychological safety and security. This stable tendency is regulated by internal working models of attachment (Berman and Sperling, 1995). Internal working models may be complex structures. Available research suggests that they include or influence social perception, symbolic representations of people and relationships, social behaviour, affective predispositions, defenses, and configuration of discourse regarding attachment relationships (Rothbard. and Shaver, 1995).

Berman and Sperling (1995) proposed three major conceptualisations of adult attachment: attachment as a state-based syndrome or set of distressing symptoms that emerge when the attachment figure is unavailable. This model is based on reactions of infants to separation from their attachment figures and they are summarised in the stages of protest, despair and detachment (Bowlby, 1973). Adults do exhibit a consistent pattern of reactions to marital separation (Weiss, 1975) and death of a spouse (Parkes, 1972). The second model is attachment as a trait-based tendency to establish specific types of

attachment relationships and to react to these relationships similarly. This line of research in adult attachment involves establishing attachment styles, which refer to particular internal working models that determine people's behavioural responses to real or imagined separation and reunion from their attachment figures. The third approach to conceptualising attachment in adults is considering attachment as an interactive process between two people in an ongoing relationship. Using this kind of approach some authors have found significant correlations between attachment security and marital quality (Kobak and Hazan, 1991).

Different instruments have been developed to evaluate attachment patterns in populations according to their developmental stage. Although most of the instruments developed with this purpose use the basic categories of the Strange Situation procedure or similar ones, not all of them are based in direct behavioural observation in an attempt to tackle the complexities of the new dimensions that attachment systems have in later age. Modifications of the Strange Situation Procedure (SSP) have been used with school children (Main and Cassidy, 1988), and adults (Simpson et al., 1992) with consistent results regarding attachment classification, but several other instruments not based in direct behavioural observation have been developed, the best known is the Adult Attachment Interview (AAI) developed by George et al. (1985). This instrument is based on the evaluation of the adult's current mental representation of attachment on the basis of their discourse concerning past and present attachment experiences, particularly with the adult's own parents. In the AAI coding system, the content of the adult's autobiographical history is irrelevant; classification of the transcribed interviews depends

on the form in which the story has been told, particularly the degree of coherence in a linguistic sense. This instrument has been widely used, particularly in studies of intergenerational transmission of attachment. Although the mechanisms by which early childhood experiences affect AAI classification are not completely clear, a good transgenerational association has been empirically validated in several studies (Fonagy et al, 1991; Steele et al., 1996). Mothers' AAI attachment categories have been shown to predict the SSP attachment classification of their babies when aged between one and two years old. AAI classification also has good concordance with the SSP attachment classification in the same subject after follow-up of several years until adolescence (van Ijzendoorn, 1995). However, the administration and scoring of this instrument require in-depth training, a factor which has limited its accessibility, particularly for validation studies with other adult attachment instruments.

The need to have more accessible and user-friendly instruments for attachment assessment led several researchers to develop alternative instruments that were more appropriate to their particular research fields. Several self-report questionnaires and attachment interviews have been developed in recent years. A summary of the more relevant ones is given in Table 7.1 below.

Table 7.1 Adult Attachment assessment instruments.

Author	Name	Characteristics
Henderson et al., 1981	Interview Schedule for Social Interaction	Assesses the availability and perceived adequacy of attachment (support from intimates) and of "Social Integration" (support from the wider social network). Highly structured format focused on current pattern of social interaction
George et al., 1985	Adult attachment interview	Assesses current mental representations of past and present attachment relationship (basically parents) with emphasis on linguistic coherence of the narratives rather than actual content.
West & Sheldon, 1992	Adult Reciprocal Attachment Questionnaire	Self-report questionnaire based on Bowlby's key features of adult attachment such as proximity seeking, separation protest and use of attachment figure; assesses several dimensions of normal and abnormal attachment towards the current attachment figure, taking in account reciprocity as a particular feature of adult attachment to the sexual partner.
Parker et al., 1979	Parental Bonding Instrument	Self-report questionnaire assesses subjects' retrospective memories of their parents in terms of two major dimensions of parenting: care and control.
Wilhem & Parker, 1988	Intimate Bonds Measure	Self-report questionnaire assesses the extent to which dimensions of care and control characterise the behaviour and perceived attitudes of an intimate adult relationship partner.
Hazan & Shaver, 1987	Adult Attachment Questionnaire	Forced-choice self-report single item questionnaire based on the assumption that parallels of the major infant-caregiver attachment styles identified by the SSP (secure, avoidant and anxious/ambivalent) can be found among adult lovers
Bartholomew & Horowitz, 1991	Attachment Interview	Semi-structured interview assesses quality of friendships, romantic relationships and feelings about the importance of close relationships. It produces four attachment prototypes: secure, dismissing, preoccupied, and fearful. It is based on a two-dimensional structure in which the positive and negative model of self and of other are combined.

Simpson, 1990.	Attachment Style Measure	Self-report questionnaire based on a two-dimensional structure, defined by "comfort with closeness" and "anxiety".
Collins & Read, 1990	Attachment Inventory	Self-report questionnaire built with a three-dimensional structure based on closeness, dependency and anxiety, in the context of current intimate relationships.
Sperling & Berman, 1991	Attachment Style Inventory	Self-report questionnaire based on a three-dimensional structure formed from aggressive and dependent interpersonal drives, plus an additional oblique dimension of security-insecurity.
Hindy et al., 1989	Anxious Romantic Attachment Scale	Self-report questionnaire which determines tendency towards anxious romantic attachment (TTARAT) based in two factors: Romantic Anxiety and Romantic Obsession.
Armsden & Greenberg, 1987.	Inventory of Parent and Peer Attachment	Self-report measure that assesses quality of parent and peer attachment in adolescents and adults, based in Bowlby's formulations regarding affective-cognitive dimensions of trust in the accessibility and responsiveness of attachment figures.
Bell et al., 1986	Bell Object Relations Inventory	Self-report measure assesses various dimensions of object relations. It assesses four dimensions of object relations functioning: Alienation, Insecure Attachment, Egocentricity and Social Incompetence. It is part of a more extensive questionnaire which also assesses various aspects of reality testing. Based on object relations theoretical framework.
Feeney et al., 1994	Attachment Style Questionnaire	Self-report questionnaire based on a two-dimension structure of attachment: discomfort with closeness and anxiety; produces four categories of adult attachment, similar to Bartholomew's (1991) and Hazan & Shaver's (1987) models of attachment assessment.
Bifulco et al., 2002.	Attachment Style Interview (ASI)	Semi-structured interview assesses quality of attachment relationships with partner, family and close friends and attachment attitudes reflecting anxiety/ ambivalence and avoidance/distance. Produces five categories of adult attachment. Based on Bartholomew's (1991) bi-dimensional model of attachment assessment.

In contrast to what took place in child attachment research with the Strange Situation Procedure (Ainsworth, 1978) the variety of adult attachment measures employed by researchers has played against the development of a cohesive body of empirical findings. The available instruments differ in their fundamental approach to attachment issues according to their conceptualisation of adult attachment, for instance the AAI (George et al., 1985) focuses on current mental representations of attachment bonds in early relationships within the family of origin, losses and separations and other information relevant to attachment. The rating scale is based on the level of coherence of the discourse rather than the actual contents, therefore, it is a taxonomy based on representations of cognitive and behavioural attributions as defensive processes, not attachment behaviours per se. The Intimate Bond Measure (Wilhem and Parker, 1988) focuses on the subject's perceptions of the behavior and attitudes of their partner, rather than the subject's own needs. The forced choice measure of Hazan and Shaver (1987) adopts a "style" or "type"-based approach, attempting to identify romantic relationship styles that parallel the basic SSP attachment categories. West and Sheldon's (1992) Adult Reciprocal Attachment instrument assumes that the main attachment figure in adults is the sexual partner and that attachment functions are reciprocal; furthermore, it does not contain items that explicitly assess secure attachment. Bifulco et al.'s (2002) Attachment Style Interview assesses attachment as a particular quality of different relationships providing social support, and identifies not only attachment profiles but also the extent to which the insecure styles are dysfunctional. Contrary to self-report instruments the ASI has been defined as a investigator-based measure where the researcher rather than the

respondent makes the judgment in scoring the characteristics of attachment style and support.

Nevertheless, Sperling et al. (1996) have reported a high level of consistency between scale and sub-scale reliability and good correlations between several self-report attachment measures administered to a sample of college students. Similar findings have been reported by Lyddon et al. (1993) regarding four different self-report measures expressly grounded in attachment theory or object relations theory. Both authors recommended a careful selection of the instrument according to its strengths and weaknesses prior to its use in research, suggesting a context-specific use for each measure, taking into account its clinical and theoretical applications.

In 1998, Brenan et al. reported a large sample factor analytic study in which all known self-report measures were included in a single analysis. When the various authors' own subscales (totaling 60) were factor analysed, the Anxiety and Avoidance factors emerged clearly. This is consistent with Bartholomew's (1990) and Bartholomew and Horowitz' (1991) four style conceptual scheme which included the original Hazan and Shaver's styles (1987) and added a second kind of avoidance (dismissing-avoidance, based on a similar category in the Adult Attachment Interview (George et al., 1985)). Underlying these four types or styles are two basic dimensions, Model of the Self and Model of Other (or partner). This is organized conceptually along two axes: Anxiety (low to high) and Avoidance (low to high). Secure attached individuals are low in avoidance and anxiety, Dismissing-Avoidant individuals are low in anxiety and high in avoidance, Fearful-

avoidant individuals are high in avoidance and anxiety and Preoccupied individuals are low in avoidance and high in anxiety (Shaver and Fraley, 2002). Fraley and Waller (1998) have shown that there would be no evidence for a true attachment typology, the conceptual types or styles would be regions in a two-dimensional space, and whenever typological measures are used instead of the continuous scales, precision is lost. Thus, Shaver and Fraley (2002) recommend conceptualising the patterns of attachment in dimensional terms. Brenan et al. (1998) showed that these two dimensions are conceptually the same as those of Ainsworth's for infants (Ainsworth, 1978) and that the distinctions among attachment orientations have been always a matter of scores on Anxiety and Avoidance. The exception to this is the Adult Attachment Interview which focuses primarily on coherence of discourse, not on Anxiety or Avoidance.

There have been new developments in adult attachment measures over more recent years following this rationale such as Brenan et al.'s (1998) Experiences in Close Relationships (ECR), a 36-item self-report measure which can be used to create two subscales: Avoidance (or Discomfort with Closeness and Discomfort Depending on Others) and Anxiety (or Fear of Rejection and Abandonment) and Fraley et al.'s (2000) Experiences in Close Relationships Revised (ECR-R), also a 36-item self report attachment measure in which the items were derived from an analysis of most of the existing self-report measures of adult romantic attachment. The ECR-R also yields scores on two subcales: Avoidance and Anxiety.

In this thesis, four instruments were chosen from those available at the time of the study, in order to obtain a comprehensive view of the attachment style of the women: the Maternal-Fetal Attachment Instrument (Condon, 1992), the Adult Reciprocal Attachment Questionnaire (West and Sheldon, 1992), the Adult Attachment Questionnaire (Hazan and Shaver, 1987) and the Attachment Style Interview (Bifulco et al., 2002). The Maternal Fetal Attachment Instrument was chosen to evaluate the care-giving component of the attachment system. The Adult Reciprocal Attachment Questionnaire was chosen to assess the attachment component with sexual partner, the Adult Attachment Questionnaire was chosen to explore attachment from the perspective of choice of romantic partner, and the Attachment Style Interview was chosen to explore the attachment profile of subjects from their own attachment attitudes reflecting anxiety/ambivalence and avoidance/distance in maintaining relationships and the quality of support from partner and significant others.

Despite the lack of uniformity in the criteria for the measurement of adult attachment, there have been several efforts to establish links between attachment patterns in adults and risk for developing diverse clinical conditions or resilience under other adverse circumstances. The next section will review the links between adult attachment and mental health.

7.1 Adult attachment and mental health

Research derived from attachment theory has generated a rich and rapidly growing body of findings on the importance of early care-giving experience in the development of psychopathology and in the promotion of adaptation. Attachment theory and research offer a formal, quantitative means through the careful study of both non-verbal behaviour and language, to validate important hypotheses that, until now, necessarily relied mostly on unsystematic observation: the importance of parent-child relationships in the development of personality and etiology of psychological disorder and the cross-generational transmission of psychopathology.

Van Ijzendoorn and Bakermans-Kranenburg (1996), in a meta-analysis of 33 studies containing more than 2000 AAI classifications, have reported a different distribution of adult attachment classifications in healthy individuals compared to clinical populations, with a strong over-representation of insecure attachment categories in clinical participants. However, these authors did not find any systematic relationships between attachment categories and clinical diagnosis.

Other authors, using different attachment assessments for adults, have contributed to an increasing literature reporting associations between an insecure pattern of attachment and psychopathology (West, Keller & Link, 1993; West, Rose & Sheldon, 1993; Horowitz et al., 1993; Patrick et al., 1994; Bifulco et al. 2002). These authors have explored the discriminative capacity of the attachment construct to distinguish psychiatric and general populations with positive preliminary findings regarding a more direct relationship with attachment. The more direct associations of insecure attachment have been with

personality disorders, suicidality, antisocial or substance abuse behaviour, and depression (Sheldon and West, 1990; West, Keller & Link, 1993; Fonagy et al., 1995; Adam et al., 1996; Rosenstein and Horowitz, 1996, Bifulco et al., 2002). In addition to these findings, Birtchnell (1993) reported the relationship of attachment to depression and ability to relate and De Ruiter and van Ijzendoorn (1992) reported an association between insecure attachment and agoraphobia. In a sample of first-time mothers from a high risk deprived social background, Pianta et al. (1996) reported significant differences in the experience of subjective distress in terms of psychiatric symptomatology related to attachment style, although all the participants reported fairly high levels of symptomatology regardless of their attachment status. Thus, the preoccupied group scored highest on a range of indices of psychiatric symptoms indicative of self-perceived distress and relationship problems, the dismissing group reported comparatively little psychiatric distress, emphasised independence, and scored the lowest on self-reported anxiety. Scores for the autonomous group ranged between the scores of the other groups on most scales. Jones (1996) suggested that perhaps the strongest findings regarding attachment and psychopathology concern the relation between borderline personality disorder and preoccupied attachment (Fonagy et al., 1996), and the link between unresolved-disorganised response to loss, trauma or separation from attachment figures and severe adolescent psychopathology (Adam et al., 1996; Allen et al., 1996). Notwithstanding, in all these studies a subject's insecure attachment appears to be a relevant risk factor for the development of dysfunctional relationships with others, with the environment or with themselves.

It is important to note that non-clinical samples also show a significant percentage of individuals classified as insecurely attached, so the relationship between attachment and psychopathology requires further clarification. It is possible that insecure attachment is basically an extremely common expression of psychological dysfunction or maybe that descriptive psychiatric classification systems and narrow symptom measures do not capture the psychological and behavioural dimensions that are most relevant to an individual's attachment models and, hence, do not yield a sufficiently differentiated picture of the relationship between attachment classification and disordered function. Jones (1996) has suggested that studies examining the relationships between attachment classification and clinically relevant measures of interpersonal behaviour, role expectations, and repetitive emotional structures would be useful to understand the influence of attachment patterns in the origin of dysfunctional behaviour. Nevertheless, longitudinal studies are a more reliable way of observing links between insecure attachment in infancy and childhood and adult disorders. Some studies looking at the association between more extreme forms of disorganised and disoriented attachment in infancy, and later childhood aggressive behaviour disorder seem very promising in this regard (Lyons-Ruth, 1996), as well as studies exploring the predictive role of Insecure Attachment for developing depression in women (Bifulco et al., 2002, Bifulco et al., 2004).

Many studies have explored relations between personality characteristics and functioning and adult attachment assessments. Social competence and adaptive functioning have been theoretically and empirically linked to attachment. Studies of adult attachment and

personality and functioning assess several domains: self-esteem and personality traits, peer relationships and loneliness, social adjustment, physiological measures, and psychopathology and feelings of depression (Crowell and Treboux, 1995).

Attachment insecurity in adults has been found to be associated with difficulties in several different dimensions of social competence, personality traits, and adaptive functioning. In a sample of college students Kobak and Sceery (1988) reported that dismissing subjects were rated by peers as hostile and anxious. Preoccupied subjects were rated by peers as most anxious and they apppeared more symptomatic on a psychiatric symptom checklist. In a sample of female college students assessed by Smith and George (1993), preoccupied and unresolved students reported feeling anxious, and dismissing women reported loneliness and depression.

Bartholonew et al. (1991) and Horowitz et al. (1993), using their four-classification model, reported that dismissing subjects were characterized by coldness, introversion and hostility. The preoccupied group was rated as overly expressive and seeking dominance, whereas the fearful classification was associated with lack of assertiveness and social inhibition. Preccupied and fearful subjects expressed the most interpersonal distress.

Dozier and Kobak (1992) reported that college students who used deactivating (dismissing) strategies showed an increase in skin conductance during the interview when asked about separation, rejection, effects of childhood on current personality, relationship with parents since childhood and why their parent behaved as they did. Despite subjects'

efforts to minimize negative aspects of childhood and the importance of early relationships, they showed signs of physiological distress and arousal when challenged with these topics.

Wallace and Vaux (1993) reported in college students that mistrust was characteristic of both insecure groups. Insecure individuals were less positively oriented to their support networks and interdepence with the network was lowest for the avoidant group.

Insecure Avoidant individuals have been found to use alcohol to reduce tension (Brennan and Shaver, 1995) and to be prone to increased somatising when under stress (Mikulincer et al., 1993). Horowitz et al., (1993) reported that individuals with avoidant characteristics such as lack of trust, coldness and domination of others showed the poorest rate of improvement in brief therapy. Dozier (1990), using the AAI classification of attachment styles in 40 young adults in treatment for serious psychopathology, reported that individuals with stronger avoidant tendencies were less likely to seek out treatment, were poorer users of treatment and were more prone to reject treatment than were patients with more preoccupied strategies. Avoidance was inversely related to disclosure in treatment. This author noted that these individuals seem to have adopted a strategy of denying needs for help to protect themselves from the risk of caregiver unavailabilty and that this strategy is quite problematic and self-perpetuating of the psychological problems of these patients who in fact require reliable support to maintain themselves.

It has been suggested (Connors, 1997) that individuals with avoidant dismissive attachment style in adulthood will have inmense difficulty with the process of therapy because they have had to become organized around the avoidance of attachment-related information, using massive deactivating strategies. The notion of relying on a new attachment figure such as a therapist will be strongly resisted by avoidant individuals. Main (1995) has described how dismissing individuals resist the tasks presented by the interviewer's inquiries, cutting interactions with short replies, insistence of lack of memory, and a portrayal of the self as invulnerable. Mikulincer and Orbach (1995) suggested that avoidant individuals employ a strategy of nondifferentiated defensiveness and display distance from their own inner world as well as from other people. Avoidant individuals tend to be more well-organized than patients with a preoccupied attachment style (according to Fonagy et al., 1995, patients with borderline personality disorder commonly have a preoccupied style). In terms of quality of romantic relationships, avoidant individuals are the least accepting of their partners' faults (Hazan and Shaver, 1987) and are frustrated with previous partners (Brennan and Shaver, 1995).

Connors (1997) emphasized the necessity for understanding avoidant style as an adaptation to consistent rejection and recommended having patience with its rigidity. Avoidant patients would experience great anxiety around the possibility of experiencing powerful affective experiences in relationships and would consistently minimize the intensity and import of emotional matters. Therapist should expect withdrawal from these patients when they are stressed.

Hazan and Shaver (1994) have suggested that in order to shift from an avoidant style to a more secure style would involve acknowledging long-repressed insecurities and this would require a transitional phase of anxiety and insecurity. Connor (1997) has suggested the use of nonrelational concepts such as talking about learning patterns as one grew up and working to change them in the present, in order to motivate avoidant individuals to engage in therapeutic work. According to Connor (1997) the most positive outcome for a patient with an avoidant pattern of attachment is to undergo a transformation to a secure attachment pattern, this would be possible but it would require long-term treatment. It is probably more common for these patients to engage in briefer therapies in which their relational style is relatively unmodified; this would probably feel more comfortable to these patients but it would not permit the revision of relational patterns that they would need.

The present study, on smoking behaviour during pregnancy, is also in line with the statement above. We think that smoking in pregnancy is clinically relevant interpersonal behaviour, in which consideration given to the baby-to-be and the quality of the relationship with the partner appear to be critical variables in determining a woman's ability to abstain from smoking (HEA, 1996). Thus, the mother's attachment system may have an important role in this condition. The assessment of mothers' attachment pattern was conducted using the four instruments described above in order to obtain a comprehensive view of their attachment style and to examine which evaluated is more strongly associated with smoking during pregnancy.

The next four chapters are dedicated to reporting the findings from the four studies conducted by the author to explore risk factors in women who smoke during pregnancy with special emphasis on quality of relationships in the first two, and attachment patterns in the final two.

Chapter 8. Study 1: Smoking during pregnancy: a prospective study of psychosocial and reproductive factors.

8.1 Summary

Several variables associated with smoking during pregnancy have been already identified, including low socioeconomic status, low educational attainment, poor social support, younger age and unplanned pregnancy. The purpose of this research was to examine further possible risk factors associated with smoking in pregnancy that may suggest the relevance of relationship dimensions. One hundred and nineteen pregnant women who were having their first babies had been recruited in early pregnancy from a general hospital obstetric service and were followed up throughout the pregnancy and then until 4 years after the birth of the baby. In the analysis of smoking behaviour it was possible to control for several confounding variables in the search for possible risk factors. Women who smoked during pregnancy were more likely to have had previous miscarriages and terminations and to have taken longer to conceive this pregnancy. They were also more likely to report marital difficulties and more likely to physically discipline their 1-year-old infants. These results point to a possible different perspective, focused on quality of relationships, in trying to understand smoking behaviour in pregnant women.

8.2 Introduction and purpose of the study.

The purpose of this study was to analyse data from an earlier longitudinal study of pregnant women recruited in a general hospital obstetric setting, followed up one year post-natally (Kumar & Robson, 1984) and subsequently up to the time their children were four years old (Cogill et al., 1986). Although the original data were collected between 1979 and 1984, no analysis in terms of smoking behaviour had been carried out. The authors kindly gave permission for the data to be used for the purpose of this study. The main aim was to identify factors associated with women continuing to smoke in pregnancy and to look for subsequent further associations with parenting behaviour and measures in the offspring. The original purpose of the authors who collected the data was a prospective study about postnatal depression, so they recruited women in the antenatal clinic of a general hospital using very few exclusion criteria in order to obtain the most representative sample.

Apart from the fact that no previous analysis of smoking behaviour was carried out in this sample, there were further reasons for reanalysing these data:

- as a way of finding out whether patterns of smoking in pregnancy changed between 1980 and 1995;
- to allow preliminary analysis of possible associations between measures of quality of relationships and continuing to smoke in these women.
- to gather some empirical evidence to support preliminary hypotheses regarding the relevance of attachment dimensions in smoking during pregnancy.

The sample studied by Kumar and Robson (1984) allowed the major sociodemographic variables to be controlled for; the records for the sample of over 100 first-time mothers were of good quality, and the entire data set was available. It consisted of repeated measures obtained during pregnancy and up to a year post-partum. There was a follow-up study at four years when the mothers were re-interviewed and tests of the cognitive development of their infants were carried out.

8.3 Objectives

The main objectives of the reanalysis of these data were:

8.3.1 to look for differences between pregnant non-smokers and those who smoked during pregnancy in a prospective way, in particular, to look for differences in the quality of close relationships between these two groups of women that may suggest differences in patterns of attachment relationships

8.3.2 to look for differences in the offspring of non-smokers and smokers after four years at follow-up.

8.4 Methods

A group of first-time mothers (n=119) were interviewed repeatedly at fixed intervals during their pregnancies and until their babies were 4 years old. Subjects were

interviewed at predetermined times using semi-structured interviews and self-report questionnaires.

The sample was drawn from 147 women who had routinely booked at an antenatal clinic whose pregnancies were not advanced beyond 12-14 weeks at the time of the first research interview. For entry into the study, women were required to be married or to have a stable common-law partner, they should have spent 5 of the previous 10 years in Britain (to ensure an adequate command of English) and they should live within a reasonable distance of central London. Of the original 147 subjects, those retained in the study at later time points were: 114 at three months, 108 at 1 year and 92 at four years postpartum. Participants were not reimbursed for being included in the study.

8.5 Measures

The evaluations used were:

8.5.1 Social, personal and demographic history (Clare and Cairns, 1978)

8.5.2 Marital relationship interview (Clare and Cairns, 1978).

8.5.3 Maternal Adjustment and Maternal Attitudes questionnaire (MAMA; Kumar and Robson, 1984) at 12, 24, and 36 weeks of pregnancy and at 12, 26, and 52 weeks postnatally.

8.5.4 Obstetric and paediatric risks to neonate health were scrutinised in case notes and scores compiled according to the method of Prechtl (Prechtl, 1967).

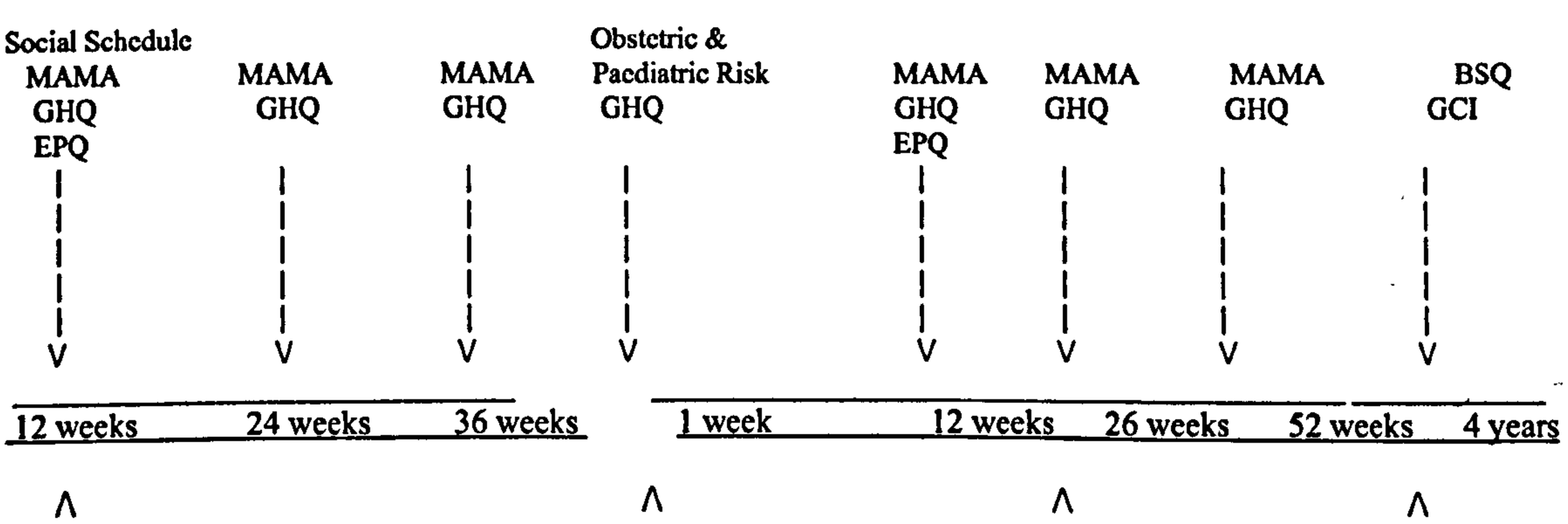
8.5.5 Behaviour Screening Questionnaire (BSQ; Richman and Graham, 1971), a sensitive determinant of child psychiatric disorder in whole populations and in patients attending child psychiatric clinics, at four years postnatally.

8.5.6 Evaluation of the children's General Cognitive Index (GCI) at age four was conducted for all the available cases (n=92) using the McCarthy scales (McCarthy, 1972).

8.5.7 Clinical evaluation by a psychiatrist at 12 weeks of pregnancy, then at 12 and 52 weeks postnatally (subjects rated as cases in the first trimester of pregnancy were followed up at either 24 or 36 weeks; those rated as cases at 12 weeks postnatally who could not be reassessed by the psychiatrist at six months, were seen at 1 year).

8.5.8 Personality Questionnaire (EPQ; Eysenck and Eysenck, 1975) at 12 weeks of pregnancy and at six months postnatally, and General Health Questionnaire (GHQ; Goldberg, 1972) at 12, 24, and 30 weeks of pregnancy and postnatally at one, 12, 26 and 52 weeks.

A summary of the timing of the different evaluations is presented in Figure 1 below.



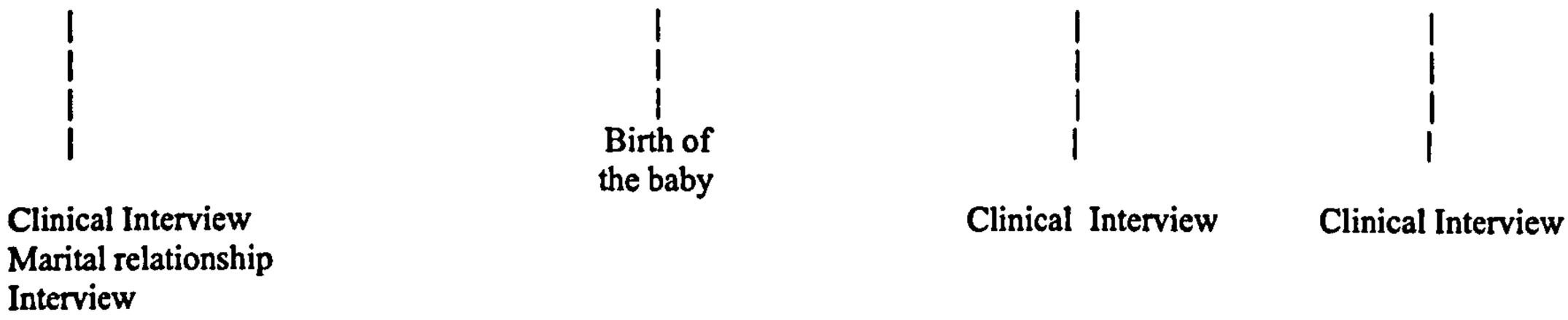


Figure 1: Timing and contents of the different evaluations in the longitudinal design

8.6 Data analysis

SPSS for Windows, version 6.0, was used for data analyses. Independent groups t-tests were used to analyse differences between means. χ^2 tests were used to analyse simple categorical effects, i.e. differences between proportions. Higher order interactions between categorical variables were assessed using hierarchical log linear analyses (Everitt, 1989). In this way it was possible to test for and partial out the separate effects of confounding variables and interactions.

8.7 Results

A "smoker" was defined as a subject who regularly smoked at least one cigarette/day, at any of the assessment times during the pregnancy (31 subjects, i.e. 26% of the sample). The range of consumption was between 1 and 30/day, with an average of 12.3 (SD=7.8). The prevalence of smoking was evaluated at 12, 24 and 36 weeks of pregnancy; as follows: 28/119 subjects at 12 weeks (23.5%), 28/118 subjects at 24 weeks (23.7%), and 27/111 subjects at 36 weeks (24.3%). The accumulated number of smokers was 31

because although two women quit smoking at 24 weeks, two others started smoking then, and finally another woman started smoking at 36 weeks. Comparisons between smokers & non-smokers on the variables assessed are presented in Tables 1, 2 and 3 below.

8.7.1 Socio-demographic variables

There were no significant differences between smokers and non-smokers in age, education, marital status, planned pregnancy, prenatal care, and working during pregnancy. There was a significant difference in socio-economic group based on the British system of classification by occupation (Registrar General, 1971). Smokers and smokers' husbands were more often in groups four and five (working class), non-smokers and non-smokers' husbands were more often in groups one, two and three (professional and non-manual workers) (see Table 8.1 below).

Table 8.1 Sociodemographic variables (Proportion (%) or mean (SD))

	Non-smokers	Smokers	Significance
Husband's socio-economic status (proportion of subjects in group 4 or 5)	15/88 (17%)	14/31 (45%)	$\chi^2 = 6.0$ $p < 0.01$
Subject's socio-economic status (proportion of subjects in group 4 or 5)	32/88 (36%)	18/31 (58%)	$\chi^2 = 9.6$ $p < 0.01$
Working during pregnancy	36/88 (41%)	8/31 (26%)	NS*
Age	28.2 (4.2)	27.7 (5.1)	NS*

8.7.2 Fertility, pregnancy and the new infant

There were significant differences between smokers and non-smokers on variables

associated with fertility and sub-fertility (see Table 8.2 below). More smokers spent a year or more trying to get pregnant. Smokers were more likely to have had one or more previous miscarriages than non-smokers and they also were more likely to have had one or more previous terminations than non-smokers.

Table 8.2 Fertility and pregnancy (proportions (%))

	Non-smokers	Smokers	Significance
Proportion who spent a year or more trying to get pregnant	11/87 (13%)	10/31 (32%)	$\chi^2 = 6.0$ $p < 0.01$
Proportion with previous miscarriage(s)	8/88 (9%)	10/31 (32%)	$\chi^2 = 9.6$ $p < 0.01$
Proportion with previous termination(s)	11/88 (12%)	10/31 (32%)	$\chi^2 = 6.2$ $p < 0.01$

Was the presence of a lower socio-economic status directly related to the higher proportion of previous terminations, previous miscarriages and a longer time trying to get pregnant or was the association with smoking stronger? To test these two hypotheses a log linear analysis of these data was carried out with socio-economic status split into high (groups 1, 2, and 3) or low (groups 4, 5), smoking status as smoker or non-smoker, together with the presence or absence of previous termination, or previous miscarriage. The time trying to get pregnant was split into two categories: up to eleven months and twelve or more months. There was a significant interaction between smoking and previous termination (partial $\chi^2 = 11$, $p < 0.001$) and a significant interaction between smoking and lower social class (partial $\chi^2 = 11.8$, $p < 0.001$) but a non-significant

interaction between lower social class and previous termination ($p = 0.07$). In the case of previous miscarriage there was a significant interaction with smoking (partial $\chi2 = 9.6$, $p < 0.01$) and there was also a significant interaction with lower social class (partial $\chi2 = 7.6$, $p < 0.01$). There was a significant interaction between spending a year (12 months) or more trying to get pregnant and smoking (partial $\chi2 = 5.2$, $p< 0.05$) and no interaction between lower social class and this variable ($p = 0.8$). Thus, when social class is taken into account, the relationship between smoking and having had a miscarriage or a termination, or difficulties conceiving, still remains significant.

Concerning attitudes to motherhood (the pregnancy, fetus and after delivery, mothering and the new infant) there were no significant differences when assessed either by the MAMA subscales or by clinical interview. However, when the baby was one year old, mothers who smoked during pregnancy more frequently reported the use of "controlled" hitting as a disciplinary tool (17/31 [55%] vs. 26/88 [29.5%]; $\chi2 = 6.4$, $p < 0.05$). A hierarchical log linear analysis was again performed to see if this effect was due to social class, but the association between smoking during pregnancy and controlled hitting persisted (partial $\chi2 = 3.7$, $p < 0.05$).

There was no difference related to maternal smoking in obstetric and neonatal risk as measured by the Prechtl rating (Prechtl, 1967). The difference in mean birthweight of babies whose mothers smoked throughout the pregnancy compared with babies of non-smokers (-94 G.) was not significant.

There were no significant differences in the four year old children's intellectual abilities measured by the General Cognitive Index (GCI) of the MacCarthy Scale Scores (MacCarthy, 1972) (non-smokers = 111.9; n = 65, smokers = 113.5, n = 21) nor in scores on the Behavioral Screening Questionnaire (Richman and Graham, 1971), (non-smokers = 5.4, n = 64; smokers = 5.5, n = 20).

8.7.3 Marital Relationship

There were significant differences between smokers and non-smokers on measures of the marital relationship (see Table 3). At twelve weeks into pregnancy smokers more frequently reported having problems and conflict in their marital relationships than did non-smokers. They also reported more frequently not trusting their partners as confidants when needing support and more frequently having difficulties in sharing interests and activities with them. There was no significant difference between smokers and non-smokers in terms of sharing responsibilities with the partner or in decision-making, and no significant difference in terms of having another person as a confidant. In order to see if there was an effect of lower social class in these findings a log linear analysis was carried out taking into account social class in the analysis. The strong interaction between smoking and marital conflict persisted (partial $\chi^2 = 6.8$ $p < 0.01$) as did the association between smoking and difficulties in sharing interests and activities with the partner (partial $\chi^2 = 4.3$, $p < 0.05$). The correlation between smoking and not being satisfied with the husband as a confidant was no longer significant, suggesting that this aspect of the relationship was influenced by social class.

There were significant and consistent differences in the Marital Relationship subscale of

the MAMA questionnaire between smokers and non-smokers when assessed at 12, 24 and 36 weeks of pregnancy, showing that women who smoked consistently described relationships with their partners as being characterised by more conflict than non-smokers. This difference did not persist after delivery because both smokers' and non-smokers' ratings changed significantly (i.e. in both groups there was a deterioration of the marital relationship). The increase in marital conflict evident after the birth of the baby was more pronounced than the difference in conflict scores between smokers and non-smokers during the pregnancy.

Similarly, attitude to sex (assessed by the MAMA sub-scale) showed a significant difference between smokers and non-smokers at 36 weeks, suggesting more problems in the sexual relationship in the smoker group at the end of their pregnancies (see Table 8.3).

8.7.4 Psychiatric assessment

In general, psychiatric morbidity did not differ between the two groups. There were no differences between smokers and non-smokers in either of the measures used to assess psychiatric disorder, the GHQ (Goldberg, 1972) and clinical interview, at any of the times assessed.

In terms of personality assessment, non-smokers had higher EPQ neuroticism scores at the 12 week antenatal assessment, but this difference did not persist because there was no significant difference between smokers and non-smokers at the postnatal assessment.

Neither were there significant differences in the psychoticism, extraversion and lie scores at any time of the evaluations.

Table 8.3 Marital relationship (proportions (%) or mean (SD)).

	Non-smokers	Smokers	Significance
Marked or severe marital conflict	6/88 (7%)	8/31 (26%)	$\chi^2 = 7.9$ $p < 0.01$
Marked dissatisfaction with husband as a confidant	6/80 (8%)	6/28 (21%)	$\chi^2 = 4.1$ $p < 0.05$
Marked difficulties in marital shared interest	2/88 (3%)	4/31 (13%)	$\chi^2 = 5.4$ $p < 0.05$
Marked difficulties in sharing responsibilities and decision making with the partner	2/88 (2%)	3/31 (10%)	NS*
Main confidant is not the partner	13/80 (16%)	4/28 (14%)	NS*
Problems in sexual relationship: MAMA at 6 weeks of pregnancy	34.4 (4.9)	31.4(7.2)	$t = 2.4$ $p < 0.05$ $df = 104$

On two other indirect measures of psychological distress at 12 weeks of pregnancy, smokers scored significantly higher than non-smokers. Smokers were more likely to report feelings of irritability (8/31(26%) vs. 8/87 (9%) $\chi^2 = 5.3$, $p < 0.05$) and more

likely to report moderate or regular drinking of alcohol during pregnancy than non-smokers (6/26 (23%) vs. 3/75 (4%) $\chi 2 = 8.6$, $p < 0.01$). This effect persisted after controlling for the effect of social class using log linear analysis (partial $\chi 2 = 9.8$, $p < 0.01$).

There were no differences in previous psychiatric history in the family, either in the subjects or in their husbands. Neither were there differences in terms of previous history of separation from parents and quality of the current relationship with them.

8.8 Discussion

In the original study (Kumar and Robson, 1984) selection criteria determined that only primiparous, married women or those with stable common-law partners were included, therefore we could not investigate effects of parity or marital status in this research. There were, however, no differences between smokers and non-smokers in terms of age, education, whether or not pregnancy was planned, amount of prenatal care received, whether or not the woman worked during the pregnancy and the presence or absence of psychiatric disorder. In previous reports these variables have all been described as risk factors for smoking in pregnancy (HEAa, 1994; Stewart and Strainer, 1995; Zambrana et al, 1991). Our discrepant results may be a function of the small sample size of smokers (n = 31) and they may also be related to some of the selection criteria mentioned above. Furthermore, because of the location of the obstetric hospital, the sample was not fully representative of the general population and only about a quarter of the women were

classified as working class (Kumar and Robson, 1984).

In spite of the small sample size, we found that smoker's socio-economic status was lower than that of non-smokers, and lower socio-economic status has been reported as a relevant variable associated with smoking in pregnancy (HEA, 1996). Nevertheless, in statistical analyses which took into account social class, other important differences between smokers and non-smokers persisted. Thus, given that possible effects of socio-demographic variables affecting smoking during pregnancy were controlled for, the differences between the two groups suggest that certain psychological factors associated with the quality of marital relationship, reproduction and motherhood may be important. Alternatively, difficulties with conception and retaining the fetus may reflect the toxic effect of nicotine.

There is increasing evidence that smoking adversely affects fertility (Jensen et al., 1992; Suonio et al., 1990) and that this effect is mediated by direct (Rosevear et al., 1992) or indirect (Fuxe et al., 1989) actions of nicotine. The effects of smoking are dose dependent and potentiated by the consumption of other substances like caffeine and alcohol (Suonio et al., 1990) or by the smoking status of the partner (Olsen, 1991). However, the toxic effects of nicotine cannot explain the higher rate of previous terminations of pregnancy in smokers.

In this study we also found evidence that smoking may have direct, physical negative effects on childbearing such as the use of "controlled" hitting as a disciplinary tool. In

addition, these negative effects may be mediated by some higher order psychological factor such as the "internal working model" in Attachment Theory (Bowlby, 1982) or a prevailing object relationship in terms of Object Relationships Theory in psychoanalysis (Fairbain, 1952). These higher order psychological factors may have an influence on the quality of the woman's relationship with her partner, as well as on her psychological maternal characteristics. Previous reports have suggested that impaired maternal fetal "attachment" (emotional bonding to the fetus) is more likely to be found in women who smoke in pregnancy. The fact of smoking during pregnancy may reflect not only a dependence on tobacco and nicotine but it may be another feature of these particular maternal characteristics. Problems with motherhood may be reflected by the higher rate of terminations, and the higher proportion of smokers who use physical discipline with their one-year old infants. Some authors have reported an association between child maltreatment and smoking during pregnancy (Pascoe, 1985; Chesare et al., 1986). These findings are in line with the hypothesis that some particular psychological characteristics of mothers who smoke may produce alterations in the mother-infant relationship, even before the birth (Hilton and Condon, 1989). Once the baby is born it is important to take into account characteristics of the baby, who could have been affected by early exposure to toxic components of tobacco smoke as well. Supporting these ideas, there are increasing reports of higher rates of hyperactivity, shorter attention span and learning difficulties in children whose mothers smoked throughout pregnancy (Naeye and Peters, 1984; Denson et al., 1975). However, in this sample there were no differences in children's behaviour at the four-year follow up. The lack of effect may be explained by the small sample size of smokers and also because the study selection criteria meant that

all these children were born into families in which both parents were present. Presence of a stable partner has been described as a protective factor for behavioural problems (Main et al., 1985).

The presence of some particular psychological factors in women who smoke in pregnancy was also supported by our findings regarding increased marital conflict in those women who smoke. These findings suggest that smokers have a type of marital relationship in which there is more conflict, with some dissatisfaction about fulfilment of emotional needs (reflected by not having the partner as a confidant and not sharing personal interests as often as non-smokers). There were no previous reports of an association between impairments of the marital relationship and increased risk of smoking during pregnancy, although some authors (Stewart and Strainer, 1995; Cnattingius and Thorslund, 1990; HEA, 1996) have reported that there is a higher risk in single women than in women with a partner. Others (Blackburn and Graham, 1993; Casper and Hogan, 1990) have reported that pregnant women are more likely to smoke if they do not have adequate social support, although the type of social support has not been specified.

Follow up measures of the quality of the marital relationship during the pregnancy allowed us to establish that the differences between smokers and non-smokers remained stable over the pregnancy period. However, the birth of the baby resulted in a deterioration of the quality of the marital relationship for both smokers and non-smokers. This is particularly interesting considering that in most studies of relapse of smoking

behaviour in women, there is a strong tendency to relapse into previous smoking patterns shortly after the birth of the baby (HEA, 1996). The role of marital difficulties as a risk factor for relapse could be a fruitful topic for further research, especially as marital difficulties may interact with difficulties in caring for the newborn baby and other small children, which has been reported as an important risk factor for smoking relapse.

There were some indirect indicators of psychological distress such as irritability and higher alcohol consumption in smokers, which are consistent with views about the gender specificity of smoking in women and how smoking may have a particular role as a coping strategy for dealing with unpleasant feelings (Lukas, 1993). It is possible therefore that continuing smoking may be an indicator of psychological vulnerability which was present before conception and persisted throughout the pregnancy. The HEA's (1996) profile of a woman who can abstain from tobacco during pregnancy was of a woman who had good external support (mainly from a committed partner) and good internal psychological resources (e.g. good self-esteem). In our sample, all women had a partner, but smokers differed significantly in the quality of the relationship with their partner and this effect remained after controlling for social class. Based on Attachment Theory (see Chapter 4) it can be argued that the quality of the relationship with the partner reflects the mother's capacity for establishing supportive relationships and it may be closely related with the quality of other significant relationships as well. So far, these findings are consistent with those of the HEA study and they serve as a preliminary step for further research to explore the quality of significant relationship in more depth. Two of the studies which follow (chapters 10 and 11) explore attachment relationships in pregnant

women who do and do not smoke.

Before going on to explore attachment dimensions of women who smoke in pregnancy, a partial replication of the analysis of the data from Kumar and Robson's (1984) study was carried out on data from a similar study of 108 Chilean women (Jadresic, 1991). This replication not only permitted testing of the robustness of previous findings, but it also allowed an examination of smoking patterns in women in a different cultural setting. For this purpose, in study 2, the smoking habits before and during the pregnancy of a sample of 108 Chilean pregnant women were examined.

Chapter 9. Study 2: Smoking during pregnancy in Chilean women.

9.1 Summary

The purpose of this research was: to examine the prevalence of smoking during pregnancy in Chilean women, to examine possible risk factors associated with smoking in the context of their pregnancy, particularly those which may suggest attachment dimensions and to assess prospectively the relevance of smoking as an early marker of post-natal psychiatric disorder. A random sample of 108 middle-class women was assessed at 24-30 weeks of pregnancy and again between 8-12 weeks post-natally. Results: Women with a history of smoking prior to the pregnancy (n=62) scored higher on the Maudsley Marital Questionnaire, indicating that smokers had more marital conflict than non-smokers, they were also more likely to have drunk alcohol on a regular basis in the past. The prevalence of smoking at the beginning of the third trimester of pregnancy was 5.5% (n=6). All women who smoked during pregnancy presented psychiatric symptoms or diagnosis of psychiatric disorder at the postnatal assessment. This association was not found in British women in study 1. In spite of the low prevalence of smoking during pregnancy, potentially important associations with some psychosocial risks factors were found, such as previous history of psychological treatment, higher rates of alcohol consumption, previous use of psychotropic medication and higher rates of previous terminations of pregnancy. Like study 1 in Britain, this study is a prospective one and it also allowed an examination of psychosocial factors associated with smoking in pregnancy. Some indicators such as higher scores on marital conflict in smokers,

higher rate of previous terminations of pregnancy, higher rates of alcohol consumption, use of psychotropic drugs and higher report of emotional insecurity during childhood may also be related to similar higher order psychological factors such as attachment patterns. However, there is a lower smoking prevalence in pregnancy in Chilean women, so there is a cultural factor which may account for the differences between the two samples in terms of the association of smoking in pregnancy and postnatal psychiatric symptoms. After this preliminary findings and considerations, the main hipotheses of this thesis regarding the relevance of attachment dimensions on smoking behaviour during pregnancy will be addressed more directly in the next chapters.

9.2 Introduction

Most studies of cigarette smoking in pregnant women and its associated risk for perinatal morbidity and mortality, such as low birthweight, ectopic pregnancy (HEA, 1994a; Phillips et al., 1992; Knoll et al., 1995), spontaneous abortion and premature delivery (HEA, 1994 a, b, c) and child health problems such as colds, asthma, other respiratory problems, middle ear infections, and sudden infant death syndrome (US DHHS, 1990) have been carried out in developed countries. A number of North American, European, and Australian studies have shown rates of smoking during pregnancy of approximately 20 to 30% (Clark et al., 1992; Blume and Russell, 1993). We know that in Britain at least 30% of women smoke throughout pregnancy (HEA, 1996). Studies linking cigarette smoking in pregnancy and psychiatric morbidity have been conducted, but only in developed countries. (Blume and Russell, 1993; Zuckerman et al,, 1989; Stewart and

Strainer, 1995). There are very few studies looking specifically at smoking in pregnancy in developing countries.

The prevalence of smoking in a sample of Chilean pregnant women was studied in order to explore its associated risk factors, particularly psychological problems evidenced by quality of relationships and psychiatric morbidity. As in the analysis of the UK prospective study carried out 15 years earlier (Kumar and Robson, 1984) it was possible to analyse data from a previous prospective study about postnatal mental disorders in Chilean women (Jadresic et al., 1992). Permission was kindly given by the author to re-examine the data for the purpose of this study of smoking behaviours. As the study was a prospective one and women were followed-up after the birth of the baby, this offered the opportunity to test the predictive effect on clinical variables of continuing to smoke during pregnancy.

Tobacco consumption in Latin American countries has been reported to be increasing over the last two decades, particularly among women (Medina et al., 1986a; Farga, 1983; WHO, 1997). There are a few studies of smoking in pregnancy and they have shown similar patterns of perinatal morbidity (e.g. low birthweight, higher rate of premature delivery) to those seen in the developed world (Halal et al, 1993; Padron and Sanchez, 1990; Cifuentes et al., 1983; Lippi et al., 1986; Conde et al., 1989).

In Chile, rates of smoking during pregnancy of between 10 and 40% have been reported in different samples (Cabello et al., 1991; Medina et al., 1986b; Vio del Rio et al., 1984;

Herrera et al., 1987). No Latin American study has investigated putative links between psychiatric morbidity and smoking during pregnancy.

9.3 Purpose

The purpose of this study was to determine:

9.3.1 the prevalence of smoking during pregnancy in a sample of middle-class Chilean pregnant women

9.3.2 the psychosocial and demographic characteristics that differentiate smoking from non-smoking pregnant women , particularly those which may be related to attachment dimensions

9.3.3 psychiatric morbidity associated with previous smoking and smoking during pregnancy.

9.4 Methods

The Sample: A sample of 108 women had been recruited randomly from a teaching hospital antenatal clinic (Centro de Diagnostico de la Pontificia Universidad Catolica de Chile) if they fulfilled the following inclusion criteria: being between 24-30 weeks of pregnancy, having a basic level of education (6 years) and living in Santiago, Chile. There were no refusals to participate in the study. No participant was reimbursed for her collaboration to the study. The age range of the sample was 17- 45 years with a mean age of 27.7 (SD: 5.3), most of the women were from a middle-class background, which

was representative of women attending the antenatal clinic where the sample was recruited. 87% of the sample were married and 7.4% were single. Almost half of the sample were exclusively housewives, almost a quarter were manual workers, or white collar employees, 12% were professionals and 9% were students. Almost half of the sample were primiparous. Of the rest, most had two children; only two subjects had three children. Almost 90% of the women were classified as having normal pregnancies in their routine checks by health professionals. This study was completed in 1991.

Two types of criteria were used to identify the presence of psychological problems in these women. Firstly data that had been obtained by means of semi-structured psychiatric interview (PAS; Dean et al., 1983) were categorised according to the Research Diagnostic Criteria (Spitzer et al., 1978). Secondly, a wider criterion for "emotional disturbance" was applied to women presenting with psychiatric symptoms, but not meeting the RDC threshold regarding number of symptoms (Jadresic et al., 1992).

Data collection method: Between 24-30 weeks of pregnancy subjects were interviewed by a member of the research team using standardised questionnaires and semi-structured interviews. Psychiatric assessments were carried out, independently of psychosocial assessments, by a psychiatrist. Women were followed up and assessed again between 8-12 weeks postnatally using similar methodology.

9.5 Instruments

The instruments used were:

9.5.1 Social, personal and demographic history (Clare and Cairns, 1978).

9.5.2 Socio-economic Evaluation Scale (Alvarez et al., 1985).

9.5.3 Social Support Scale (Paez et al, 1985).

9.5.4 Life Events Scale for Obstetric Groups (Barnett et al., 1983).

9.5.5 Maudsley Marital Questionnaire (Arrindell et al., 1983.).

9.5.6 Depression Screening Questionnaire (CSD-20; Florenzano et al., 1984)

9.5.7 Psychiatric Assessment Schedule (PAS; Dean et al., 1983) to make a diagnosis according to the Research Diagnostic Criteria (RDC; Spitzer et al., 1978).

9.5.8 Subjects were also assessed postnatally using the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987).

9.5.9 Smoking status and daily consumption of cigarettes prior to the pregnancy and during the pregnancy was registered together with socio-demographic, medical and obstetric history in the study file. A smoker was defined as a subject who regularly smoked at least one cigarette/day at the time of the first antenatal assessment. A previous

smoker was defined as a subject who had smoked regularly at least one cigarette/day at any time prior to the pregnancy.

A summary of the timing and content of the different evaluations is presented in Figure 2 below.

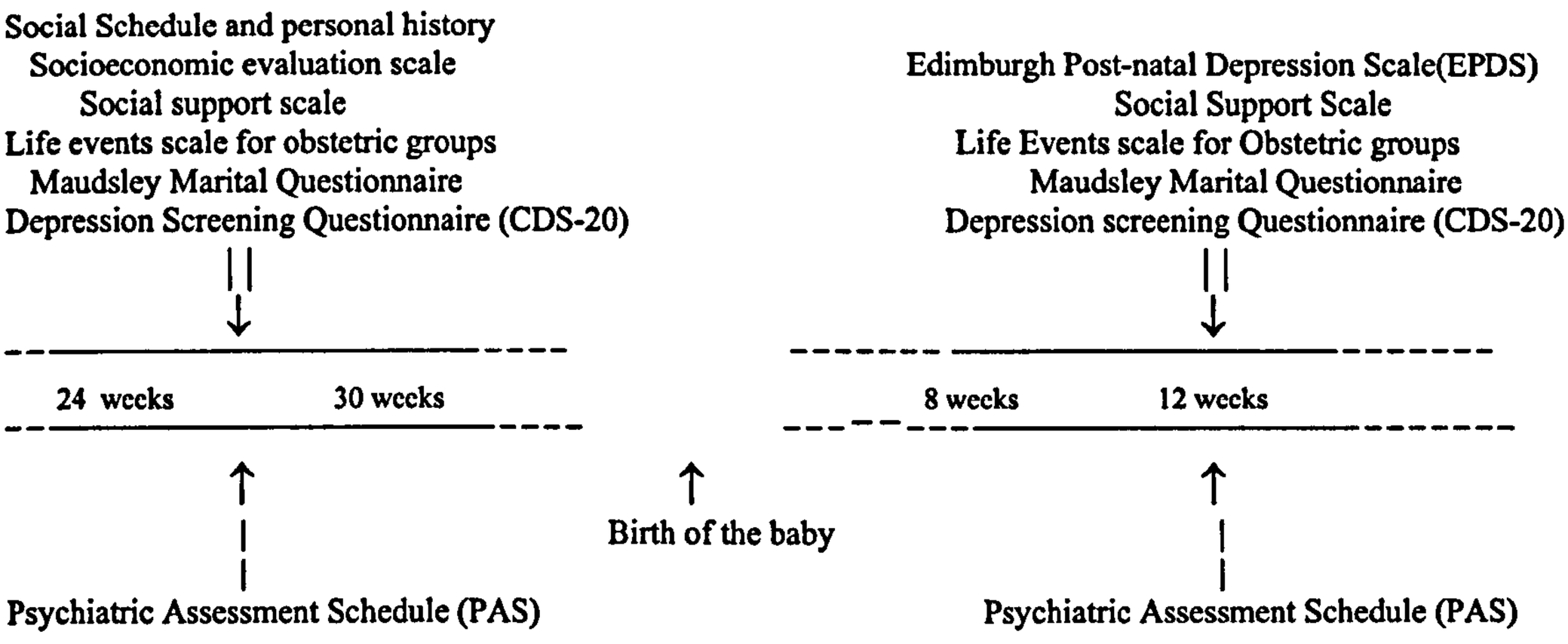


Figure 2. Timing and content of the different evaluations in the longitudinal study.

9.6 Statistical Analysis

SPSS for Windows, version 6.0, was used for data analyses. Independent groups t-tests were used to analyse differences between means. Chi-square tests were used to analyse categorical effects, i.e. differences between proportions.

9.7 Results

9.7.1 Psychiatric symptoms

The prevalence of "emotional disturbance" was 35.2% during the entire pregnancy period. 7.4% met RDC criteria for depressive disorders and 2% for Generalised Anxiety

Disorder. Among the other women, 2.8% presented "depressive mood" symptoms and 23.1% "anxious mood" symptoms (both below RDC criteria). After the birth of the baby there was a 52% prevalence and 45% incidence (new cases) of emotional disorder: 9.2% were rated as depressed according to RDC criteria, 2% were categorised as suffering from Generalised Anxiety Disorders, 12.9% reported having "depressive mood" symptoms (but below the RDC criteria for Depression) and 17.6% reported having "anxious mood" symptoms. For the purpose of this study one subject was excluded because information about her smoking status was missing.

9.7.2 Previous history of smoking

The life time prevalence of smoking prior to the pregnancy was 58% (n=62). The range of past cigarette consumption was between 1 to 20/day, excepting one subject who reported having smoked more than 20 cigarettes/day.

9.7.3 Prevalence of smoking during pregnancy

The prevalence of smoking in pregnancy in this sample was 5.5% (n=6), substantially lower than in the UK study (see Chapter 8). The range of cigarette consumption was between 1 to 20/day.

9.7.4 Personal history and socio-demographic variables

There were no significant differences between lifetime smokers (n=62) and non-smokers in age, socio-economic status and marital status. However, women who smoked prior to the pregnancy were more likely than non-smokers to have been separated from their

mothers for more than one month before age 11 (17/62 [27%] vs 5/45 [11%} $\chi^2 = 4.2$ p < 0.05).

Women who had continued smoking during pregnancy (n=6) were more likely to work outside the home and they were more likely to report emotional insecurity during childhood in the research questionnaire (See Table 9.1).

Table 9.1 Social, personal, and obstetric history (proportions (%))

	Non-smokers n = 101	Smokers n = 6	Significance
Proportion of subjects working outside the home	53/101 (53%)	6/6 (100%)	$\chi^2 = 5.2$ $p < 0.05$
Proportion of subjects reporting emotional insecurity during childhood	18/101 (18%)	3/6 (50%)	$\chi^2 = 3.7$ $p < 0.05$
Proportion of subjects with unplanned pregnancy	70/101 (70%)	6/6 (100%)	NS *
Proportion of subjects reporting previous termination of pregnancy	1/ 101 (1%)	1/6 (16%)	$\chi^2 = 7.6$ $p < 0.01$

* NS: Non- Significant

Note: the definition of emotional insecurity during childhood was related to the question of emotional family atmosphere during childhood contained in the social and personal history instrument (Clare and Cairns, 1978).

9.7.5 Quality of Marital relationship:

Women who smoked before they become pregnant (n=62) scored significantly higher on the Maudsley Marital Questionnaire both during pregnancy as well as in the postnatal period, indicating that they reported more marital conflict than non-smokers (n=45) (See Figure 2). There were no differences in responses to the Maudsley Marital Questionnaire between women who continued smoking during pregnancy (n=6) and non-smokers (n=101).

9.7.6 Psychiatric assessment:

Women who smoked prior to the pregnancy did not differ from non-smokers in terms of psychiatric diagnosis on the pre and postnatal assessments but they were more likely to have drunk alcohol on a regular basis in the past (100cc or more daily) (15/62 [24 %] vs. 4/45 [9%] $\chi^2 = 4.2$, $p < 0.05$).

Women who smoked during pregnancy were more likely to present emotional disturbances characterised by anxious or depressive symptoms or by having a psychiatric diagnosis (RDC) in the postnatal assessment. 100% (n=6) of smokers presented emotional disturbances (one met RDC criteria for Depressive Disorder and one for Generalised Anxiety Disorder, two subjects reported depressed mood symptoms and two anxious mood symptoms); this was significantly different from non-smokers (n=101), 46% of whom described postnatal emotional disturbances (nine met RDC criteria for Depressive Disorder and one for Generalised Anxiety Disorder, 12 subjects reported anxious mood symptoms and 23 subjects depressive mood symptoms). Smokers were

also more likely to have had past psychiatric treatment for emotional disorders (5/6 [83%] vs. 21/101 [21%]; this difference was also significant. Smokers were also more likely to have taken prescribed and non-prescribed psychotropic drugs in the past and more likely to drink alcohol on a regular basis prior to the pregnancy. A summary of these findings is presented in Table 9.2 below.

Table 9.2 Psychiatric assessment (proportions (%))

	Non-smokers n = 101	Smokers n = 6	Significance
Proportion of subjects with postnatal emotional disturbances	46/101 (46%)	6/6 (100%)	$\chi^2 = 6.7$ $p < 0.01$
Proportion of subjects with previous treatment for psychological problems	21/101 (21%)	5/6 (83%)	$\chi^2 = 12.0$ $p < 0.001$
Proportion of subjects reporting previous consumption of psychotropic drugs	25/101 (25%)	5/6 (83%)	$\chi^2 = 9.6$ $p < 0.01$
Proportion of subjects reporting prior consumption of alcohol	15/101 (15%)	4/6 (67%)	$\chi^2 = 10.4$ $p < 0.01$

9.7.7 Obstetric history

There were no significant differences between women who smoked in the pregnancy and non-smokers in terms of obstetric variables such as birthweight, premature deliveries or method of delivery. However, smokers were more likely to report previous terminations of pregnancy than non-smokers and none of the smokers reported that their pregnancy

was planned compared with 31% of the non-smokers who did so; however, this difference was not significant. For a summary of these findings see table 1.

9.8 Discussion

The prevalence of smoking prior to pregnancy in this Chilean sample (58%) is higher than in North American samples in whom prevalence rates of 16% to 30% have been reported (US DHHS, 1990; Stewart and Steiner, 1995; Nicolaides-Bourman et al., 1993). It is also higher than the corresponding average prevalence for the EEC as a whole (39%) (deOnis and Villar, 1991) and even higher than in European countries such as Spain, France and the Netherlands where smoking in women is very prevalent (49%) (deOnis and Villar, 1991). However, a previous Chilean study (Medina et al., 1986) found that a similar prevalence rate (58%) among non-pregnant women.

The finding of differences in the quality of the marital relationship between women who smoked prior to the pregnancy and non-smokers, is consistent with study 1, in which smokers reported more conflict in their marital relationship than non-smokers. The failure to find the same tendency in the women who continued smoking during pregnancy, was probably due to the small sample size (n=6).

These observations are consistent with research in the US showing that smoking is more common in women with previous depressed affect and a reduced ability to establish intimate relationships with their spouse or partner (Kandel and Davies, 1986).

The prevalence of smoking during pregnancy in this sample (5.5%) is smaller than previous reports in Chilean, American or European samples. This may be because the sample was predominantly middle-class (Jadresic et al., 1992) and the ability to stop smoking in pregnancy is strongly associated with social class (HEA, 1994; Halal et al., 1993). Previous Chilean studies carried out in working-class samples report prevalence of smoking during pregnancy of between 10 and 40% (Cabello et al., 1991; Medina et al., 1986b; Vio del Rio et al., 1984; Herrera et al., 1987). In Britain, the prevalence of smoking during pregnancy in the upper and middle-class population is 15%; this group also has a higher rate of quitting smoking during pregnancy compared with working class women, who have 40% prevalence of smoking, with most continuing to smoke during pregnancy (HEA, 1994a, b). In pregnancy, the cessation rate in Chilean working-class samples has been reported to be 45% to 58% (Cabello et al., 1991; Herrera et al., 1987), which is higher than cessation rates in working-class samples in developed countries. Another factor that could be influencing the low prevalence in this sample is the accuracy of reported cigarette smoking. However, short-term reporting of cigarette smoking associated with pregnancy has been shown to be relatively reliable across time and correlates fairly well with levels of nicotine (Camilli et al., 1994; Fox et al., 1989). No reliability studies have been done in Latin American samples, though. Future studies might examine reliability by using laboratory tests to check the accuracy of estimations of smoking prevalence.

Cultural factors may explain the high cessation rate in this middle-class Chilean sample

when compared with European and North American populations. Cross-cultural studies comparing Mexican-American women with non-Hispanic white women in USA have showed that the odds of quitting during pregnancy were almost five times higher for Mexican-Americans (Camilli et al., 1994). It is also important to consider that Chile is a developing country where there has been sustained economic development over the last twenty years and transition from a more traditional society. Economic expansion has brought radical changes in the structure of society, particularly an increase in the number of working women and also a rise in the number of single parent families. However, Chile is a largely Catholic country in which the maternal role of women is still the most predominant one. Thus, in spite of recent social changes, there is social pressure on women to conform to expectations of traditional family values. Chile also has good public health indicators, a low infant mortality rate and life-expectation of 75 years, and similar morbidity and mortality patterns to those of developed countries (INE, 1989). In this sample almost half of the women were working or studying outside the home. Although there are laws allowing mothers maternity leave from one month before delivery until six weeks after the birth of the baby, separation from the baby causes a considerable amount of distress for most mothers. Considering that only 53% of non-smokers worked outside the home in pregnancy compared with 100% of smokers, and that the postnatal assessment was carried out close to the time of returning to work, this may have contributed to the increased reporting of emotional distress by smokers.

The results suggest an association of smoking during pregnancy with obstetric factors such as unplanned pregnancy and previous termination of pregnancy, and also with

working outside the home. There was also a strong association between smoking during pregnancy and postnatal emotional disturbances such as depressive and anxiety symptoms and psychiatric disorders. Women who smoked during pregnancy were more likely to have had treatment for psychological problems in the past and were more likely to have taken prescribed and non-prescribed psychotropic drugs prior to the pregnancy. This is consistent with the suggestion that women smoke as a coping strategy to deal with negative feelings (see previous review in Chapter 1 above) and that cigarette smoking is a form of self-medication for depression or other psychiatric problems (Stewart and Strainer, 1995). These results are also consistent with previous reports of an association between smoking during pregnancy and psychiatric disorders (Blume and Russell, 1993; Zuckerman et al., 1989; Stewart and Strainer, 1995). These associations were significant despite the small sample size of women who smoked which suggests that smoking in pregnancy may be a very powerful indicator of women's distress in this cultural context.

9.9 Conclusions

This study has shown how cultural variables can influence the prevalence of a condition which is closely related to motherhood roles, and how cultural settings may determine how relevant smoking in pregnancy can be, in terms of indicating vulnerability or risk for postnatal mental disorder.

Nevertheless, this study has also showed that, despite cultural differences, Chilean women share some common elements with women who smoke in developed countries

and particularly those from study 1 in Britain. In both studies smoking was related to the quality of marital relationship, with a clear tendency of smokers to be in a poor quality marital relationship. However, the small sample size of women who smoke during pregnancy in the Chilean study did not allow firm conclusions about this.

There were indicators of distress in women who smoked during pregnancy in both cultural settings (such as higher alcohol consumption and irritability in study 1 in the UK and higher rate of prior alcohol consumption, previous use of psychotropic drugs and previous treatment for psychological disorders in study 2 in Chile). The power of the comparison is limited by the small sample sizes and by the fact that the methods and instruments used were not the same in both studies. Another common observation was the association of smoking during pregnancy with distress and difficulties in the relationship with the partner. Unfortunately no personality assessment was made of the Chilean subjects and a replication with a larger sample of smokers, including personality evaluations and laboratory measures to improve reliability, will be necessary to definitively establish whether smoking during pregnancy may help to predict postnatal psychiatric disorder in Chilean women.

Nevertheless, from an Attachment Theory point of view, problems in the marital relationship may be considered as part of a pattern of relating contained in an internal working model, which is an essential component of the subject's personality. Several authors in Attachment Theory have suggested that the main attachment figure providing emotional support for an adult is the sexual partner (Weiss, 1991; West and Sheldon,

1994; Hazan and Shaver, 1987), and a poor quality attachment relationship is likely to elicit distress in the subject. The two studies, one in the UK and the other in Chile have pointed out the presence of distress in women who smoke, independently of their cultural setting. This distress is partly derived from the poor quality of support from the partner and also from the woman's impaired ability to obtain support from her social environment. From a theoretical point of view the ability to relate is determined by a woman's internal working model of attachment. Thus, one should expect to find differences in the quality of attachment relationships in women who smoke during pregnancy. This hypothesis is explored in the next two studies. Both studies investigate the woman's attachment style in relationship with her partner and the fetus to test if attachment dimensions play a role in in women`s smoking behaviour during pregnancy.

Study 3 is a pilot study to investigate the woman's relationship with her partner and with the fetus, to see if quality of attachment relationships plays a role in smoking behaviour in women during pregnancy.

Chapter 10. Study 3: Smoking during pregnancy and attachment factors. A pilot study

10.1 Summary

After analysing the findings from the two previous studies in which the quality of the marital relationship and indicators of distress were associated with smoking in women, the next step was to investigate the influence of attachment factors on smoking behaviour during pregnancy, particularly in relation to the inability to stop smoking. Three groups of pregnant women in the third trimester of pregnancy were recruited in consecutive series from the antenatal clinic of King's College Hospital, London: a group of smokers (n=20), a group of non-smokers (n=19), and a group of "quitters" i.e women who stopped smoking because they were pregnant (n=17). They were assessed using three attachment evaluations: the Maternal-fetal Attachment Questionnaire (Condon, 1993), the Adult Reciprocal Attachment Questionnaire (West and Sheldon, 1994) and the Adult Attachment Questionnaire (Hazan and Shaver, 1987). Socio-demographic variables, psychiatric symptomatology and personality factors were also assessed. Smokers were more likely to be classified as insecure in their attachment style according to both adult attachment assessments. There were no significant differences in Maternal-fetal emotional bonding. Smokers were also more likely to have more children, more likely to have had an unplanned pregnancy and to be from a lower socio-economic group. They were also more likely to have a partner who also smoked and more likely to consume non-prescribed drugs.

10.2 Introduction

The aim of this study was to explore more specifically the role of attachment factors in smoking behaviour during pregnancy. The project was a pilot study of the attachment instruments because none of them had been previously used in British populations, although they were created and validated originally for English-speaking groups. The Maternal Fetal Attachment Questionnaire (Condon, 1993) was from Australia, the Adult Reciprocal Attachment Questionnaire (West & Sheldon, 1992) was from Canada and the Adult Attachment Style questionnaire (Hazan and Shaver, 1987) was from USA. None of the Adult Attachment evaluations had been previously used with pregnant women. Thus, testing these instruments together with other relevant assessments was the first objective of the study, which also allowed testing of the levels of acceptance of the instruments by pregnant women.

The earlier review of Attachment Theory (Chapter 4) discussed how this perspective may provide a possible theoretical framework to integrate previous findings regarding the association of poor quality of marital relationship and other adversity with smoking in pregnancy, as a way of understanding the inability of some pregnant women to stop smoking. Bowlby (1970, 1982) suggested that internal working models are dynamic mental processes that influence an individual's affect, behaviour, and perceptions of the self, of others and of relationships, and are acquired through earlier experiences with care-givers of the subject. The internal working model provides a permanent emotional

and situational reference about how to feel and behave in situations of personal need, and conversely, when acting as a care-giver for another person (Bowlby, 1982). The attachment dimension is important in the marital relationship because it relates to having and giving security in a reciprocal way with the partner (West and Sheldon, 1994; Brennan and Shaver, 1995). It is also important in determining the way in which the mother responds to the demands of the baby. Thus, the mother will display a particular care-giving pattern with her baby and with her partner according to her previuos experience in her attachment relationships. Evidence for the transgenerational transmission of attachment style has been found in the work of several researchers such as Main et al., (1985), Fonnagy et al., (1991), Steele et al., (1996) and Benoit et al., (1994) and has been reviewed in Chapter 4.

A working hypothesis about the underlying psychological factors associated with smoking during pregnancy may be that there is an internalised pattern of relationships with babies which contributes to difficulties in becoming a mother, indexed by a history of previous terminations (such as those in study 1) and unplanned pregnancy (Adams et al., 1989). Similarly, problems in relation to infants were found in the greater use of physical discipline by smokers in the UK sample (Chapter 8). Higher marital conflict in these women might be another feature of this hypothetical pattern of relationships with significant others, which may correspond to a particular working model of attachment. Thus, one would expect smokers to be more insecure in their attachment relationships than non-smokers, and subsequently to have a poorer emotional bonding to the fetus. Women who smoke during pregnancy may also be more likely to have personality

disturbances, given the association between insecurity in adult attachment and disorders of personality which have been reported by some authors (West and Sheldon, 1987).

10.3 Objectives

No previous study has explored the link between adult attachment patterns and smoking behaviour in pregnancy and the purpose of this preliminary investigation was:

10.3.1 To test whether attachment can reliably be measured in pregnant women using different attachment evaluations.

10.3.2 To test the hypothesis that certain types of attachment patterns are associated with women's inability to stop smoking during pregnancy.

10.3.3 To look for other socio-demographic and personality factors associated with smoking during pregnancy.

10.3.4 To improve estimation of sample size for statistical power.

10.4 Methods

10.4.1 The sample:

The sample of third trimester pregnant women was recruited when they were attending the antenatal clinic at King's College Hospital. Three groups were selected according to their smoking status which was obtained from the obstetric notes. The only selection criterion was a good command of English. There was a group of smokers (n=20), a group of non-smokers (n=19) and a group of women called "quitters" who stopped smoking because they were pregnant (n=17). A smoker was defined as any woman who at the time of the interview was smoking regularly at least 1 cigarette/day. A quitter was defined as any woman who had been a smoker and who had stopped smoking before the third trimester of pregnancy. Informed consent was obtained. Refusals were slightly more frequent in the smokers group (5 subjects), than in the non-smokers group (3 subjects) or in the quitters group (1 subject). Recruitment was completed in March 1995. No participant was reimbursed for taking part in the study.

Sample size was estimated from data published on the Maternal-Fetal Attachment scale (Condon, 1993). Thus, taking a group difference of ten units in the Maternal-Fetal scale, with S.D. of ten units within each group, significance level = 0.05 and power = 0.8, 17 subjects would be needed in each group (Dallal, 1988). This was a preliminary estimation, because there were no previous data from British populations and this study

was basically a pilot to determine a more suitable sample size for the attachment measures.

Subjects were recruited if they were in the third trimester of pregnancy when they attended for an ante-natal check. After giving informed consent, they filled in a set of self-report questionnaires at the clinic. The interviewer stayed with the subjects while they were completing the questionnaires to provide any necessary clarification. It took on average one hour to complete the entire set.

10.5 Instruments:

The instruments used were:

10.5.1 The Maternal-Fetal Attachment Questionnaire (Condon, 1993, see Appendix A) is a 19-item self-report questionnaire designed to measure the parental-foetal relationship which produces a total score ranging from 19 to 95 (Cronbach's alpha 0.818) . The instrument allows comparison of individuals and groups in terms of "attachment" to the fetus (emotional bonding to the fetus). It has two subcales, quality of attachment (10 items), and time spent in attachment mode (8 items). Each item has a five-point response scale ranging from "almost all the time", "very frequently", "frequently", "occasionnaly", to "not at all". Other items ranged from "very positive" to "very negative" or from "very weak or non-existent" to "very strong". Rating scale has ten reverse scoring items. Item 3 is presented as a sample item :

(3) Over the past two weeks my feelings about the baby inside me have been:

( ) Very positive

( ) Mainly positive

( ) Mixed positive and negative

( ) Mainly negative

( ) Very negative

10.5.2 The Adult Reciprocal Attachment Questionnaire (West and Sheldon-Keller, 1994, see Appendix B) is a 43-item self-report questionnaire designed to measure attachment to the main attachment figure in adulthood, the partner (Minimal acceptable alpha 0.7). It is divided into nine sub-scales: five Dimensions of Attachment: Proximity Seeking (3 items), Separation Protest (3 items), Feared Loss (3 items), Availability of Attachment Figure (3 items) and Use of Attachment Figure (3 items); and four Patterns of Attachment: Angry Withdrawal (7 items), Compulsive Care Giving (7 items), Compulsive Self-Reliance (7 items) and Compulsive Care Seeking (7 items). Each item has a five-point response scale ranging from "strongly disagree" "disagree", "somewhat agree and some what disagree", "agree", to "strongly agree". Rating scale has reverse and direct codings in each subcale. Total score allows comparison of individuals and groups in terms of insecurity of attachment.

Items 42 (from proximity seeking subscale) and 36 (from angry withdraw subscale) are presented as sample items.

"42. When I am anxious I desperately need to be close to my attachment figure.

strongly disagree

disagree

somewhat agree and somewhat disagree

agree

strongly agree"

"36. I often feel angry with my attachment figure without knowing why.

strongly disagree

disagree

somewhat agree and some what disagree

agree

strongly agree"

10.5.3 The Adult Attachment Instrument (Hazan and Shaver, 1987, see Appendix D) is a forced choice questionnaire between three options, each of them representing an attachment pattern: Secure, Insecure Avoidant, or Anxious-Ambivalent. This is based on the theory that love in adulthood is similar to the kind of love which an infant feels for her care-giver in terms of seeking and maintaining close physical proximity. Proportions in each of the three categories can be compared between groups. One of the three items is presented as a sample item.

"1. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets to close, and often, love partners want me to be more intimate than I feel comfortable being." (insecure avoidant attachment style)..

10.5.4 The General Health Questionnaire (GHQ; Goldberg, 1972) is a validated self-report questionnaire to assess psychiatric symptoms. Since its creation, it has been used for over 30 years in several clinical and non-clinical settings and there are validated versions in several languages. This time the 30 item version was used. It produces a total score ranging from 0 to 30 points. It has a 4-point response scale ranging from "better than usual" to "much less than usual" or "not at all" to "much more than usual" or " more satisfied" to "much less satisfied", etc. It has a cut-off point which determines high risk of presenting anxious or mood disorders (>5 points). It has four sub-scales for anxiety, depression, somatic symptoms, and sleep disorders. The authors of the GHQ-30 have reported test-retest reliability at six months ranging from 0.85 to 0.92. See Appendix G.

10.5.5 The SCID-II Personality Questionnaire is an 113-item instrument for screening presence (yes) or absence (no) of specific symptoms across the spectrum for all recognized DSM-III-R personality disorders. No further evaluation with the SCID-II interview was performed because it was intended only as a preliminary examination. Using similar instruments, high test-retest reliability have been reported in clinical samples, with a very good chance-corrected agreement for all DSM-III-R personality

disorders (kappa coefficients: 0.76-1.00) (Uehara et al..1997). Cases are determined using DSM-III threshold criteria for each personality disorder category. These screening procedures have been reported to have excellent reliability and validity, with low rate of false-negative cases (Ekselius et al, 1994, Jacobsberg et al, 1995, Nussbuam and Rogers, 1992) although they produce a high false-positive rate (Hyler et al. 1990; Hyler et al., 1992; Yeung et al., 1993). Ball et al. (2001), also using the SCID-II-PQ as a standalone instrument, found internal consistency of SCID-II-PQ rated personality disorders in a population to be above 0.6 (the lowest acceptable value) (range .35 to .80) for all disorders except Schizoid. See Appendix H.

10.5.6 The Socio-Demographic and Obstetric Questionnaire (Clare and Cairns, 1978; Kumar and Robson, 1984). It is a 63-item questionnaire specifically designed for the purpose of the study. It explores sociodemographic and obstetric variables as well as questions about smoking, drinking and drug use. There are also questions about early childhood and personal history. Each item has a particular format and it is analysed separately. See Appendix Ia,

10.6 Statistical Analysis

SSPS for Windows, version 6.0, was used for data analyses. Independent groups t-tests were used to analyse differences between means. Chi-Square tests were used to analyse categorical effects, i.e. differences between proportions. Higher order interactions between categorical variables were assessed using hierarchical log linear analyses

(Everitt, 1989).

10.7 Results

10.7.1 Socio-demographic and obstetric variables

There were no significant differences in age between the three groups. Smokers were of lower socio-economic status than the other two groups (based on the British system of classification by occupation (Registrar General, HMSO, 1971)). Smokers had more previous children than non-smokers and quitters. They were less likely to have a planned pregnancy and less likely to have strong religious beliefs. Smokers also were more likely to have a partner who was unemployed and who smoked. See Table 10.1 below.

Table 10.1 Socio-demographic and obstetric variables (proportions (%)).

	Non-smokers	Smokers	Quitters	Significance
Proportion of subjects with low socio-economic status	3/16 (18%)	8/11 (73%)	7/14 (50%)	$\chi^2 = 8.03$ $p < 0.05$
Proportion of subjects with an unemployed partner	1/18 (6%)	7/17 (41%)	2/15 (13%)	$\chi^2 = 7.5$ $p < 0.05$
Proportion of subjects with previous children	4/19 (21%)	13/ 20 (65%)	5/17 (29 %)	$\chi^2 = 8.9$ $p < 0.05$
Subjects with strong religious beliefs	8/19 (42%)	2/20 (10%)	3/17 (17%)	$\chi^2 = 6.0$ $p < 0.05$
Proportion of subjects with a partner who smoked	3/19 (16%)	11/16 (69%)	6/15 (40%)	$\chi^2 = 10.2$ $p < 0.01$
Proportion of subjects with unplanned pregnancy	6/19 (32%)	15/20 (75%)	11/17 (64%)	$\chi^2 = 8.1$ $p < 0.05$

10.7.2 Attachment variables

Smokers and quitters scored significantly higher than non-smokers on the Adult Reciprocal Attachment Questionnaire, and they were more likely to be classified as insecure in their attachment style in the Adult Attachment Questionnaire. Both findings indicated a tendency for the smokers group to have an insecure adult attachment style. However, no significant differences were found between the three groups in the Maternal-Fetal Attachment Questionnaire. See Table 10.2 below.

Table 10.2 Attachment variables (proportions (%) or means (SD))

Instrument	Non-smokers	Smokers	Quitters	Significance
West & Sheldon Adult Reciprocal Attachment scores	97 (18)	111 (14)	107 (18)	$F = 3.8$ $p < 0.05$
Hazan & Shaver Adult Attachment Questionnaire: Proportion of Insecure Attachment	2/17 (12%)	9/18 (50%)	5/16 (31%)	$\chi^2 = 5.9$ $p < 0.05$
Maternal-Fetal Attachment Questionnaire scores	75 (8)	78 (7)	74 (6)	NS*

*NS : Non-significant.

There was a significant difference between smokers and the other two groups on only one sub-scale of the Adult Reciprocal Attachment Questionnaire: Use of attachment figure (indicating than they were less likely to use the attachment figure). Availability of attachment figure (indicating less availability of the attachment figure) and Compulsive

self-reliance (indicating a characteristic pattern of distrust in others and the tendency to become isolated) also had a significant difference but in these sub-scales only non-smokers scored significantly different than the other groups, indicating that Compulsive self-reliance and less Availability of the attachment figure are prevalent characteristics in quitters as well. See Table 10.3 below.

Table 10.3 Adult Reciprocal Attachment, subscales and total scores (means (SD)).

Sub-scales	Non- smokers	Smokers	Quitters	Significance
Angry withdrawal	13.8 (4.8)	16.8 (4.6)	16 (6.7)	NS*
Use of attachment figure	5.0 (1.8)	7.0 (2.8)	5.5 (1.8)	F = 3.8 p < 0.05
Availability of attachment figure	5.0 (2.1)	7.5 (3.5)	6.3 (3.2)	F = 3.2 p < 0.05
Compulsive care-giving	22.5 (4.0)	22 (4.0)	22 (3.8)	NS*
Compulsive care-seeking	15.7 (3.7)	16.1 (3.8)	18.5(4.6)	NS*
Feared loss	5.8 (2.1)	7.3 (2.7)	6.2 (2.3)	NS
Compulsive self-reliance	12.7 (3.0)	16.8 (5.7)	16.6 (4.6)	F = 4.7 p < 0.01
Total score	96.6 (18.0)	111.2 (14.3)	107.4 (17.7)	F = 3.8 p < 0.05

In order to see how strong was the association between social class with smoking if adult attachment scores were controlled for, a hierarchical log linear analysis was performed.

The median of adult attachment scores for the whole sample was used to split the score into two categories: High and Low. Using these categories, first a hierarchical log linear analysis was performed in which the effect of social class was controlled for. After controlling for social class, the association of smoking during pregnancy with Adult Attachment was no longer significant. However, the association of smoking with social class was still significant when controlling for Adult Attachment (Partial $\chi^2 = 8$, $p < 0.05$).

10.7.3 Psychiatric variables

Smokers scored significantly higher than non-smokers and quitters on the PDQ-R (screening for personality disorders) suggesting that they were more likely to present personality disorders than the other groups. Smokers were also more likely to consume non-prescribed drugs. Regarding psychiatric symptomatology, there was no significant difference in the GHQ scores between the three groups. See Table 10.4 below.

Table 10.4 Psychiatric Variables (Means (SD) or Proportions (%))

	Non-smokers	Smokers	Quitters	Significance
Screening for personality disorders	24.3 (13.5)*	35.8 (16.8)*	28.3 (20)	*t = 2.3 p < 0.05
General Health Questionnaire	8.1 (4.9)	5.6 (5.7)	7.1 (6.9)	NS
Consumption of non-prescribed drugs	3/19 (16%)	8/20 (40%)	1/17 (6%)	$\chi^2 = 6.9$ p < 0.05

NS: Non-significant

Using the procedure of splitting the adult attachment total scores into high and low by the median, log linear analysis was performed to see if the association of strong religious beliefs with quitting smoking persisted after controlling for Adult Attachment. The association persisted (Partial $\chi^2 = 8.191$, $p < 0.05$), suggesting that the influence of this variable is independent of the quality of adult attachment measured by this instrument. However, after controlling for social class, the association of smoking during pregnancy with strong religious beliefs was no longer significant,

10.8 Discussion

Consistent with previous studies in British subjects generally, smoking in pregnant women was associated with lower socio-economical status. The findings are also consistent with previous reports about the association of smoking with multiparity (HEA, 1994) non-planned pregnancy (Adams, 1989) and having a partner who smokes (Waterson, 1990). Although there are studies linking religious beliefs with lower risk of substance use, including tobacco, in the general population (Kendler et al., 1997; Francis and Mullen, 1995) the association of smoking in pregnancy with lack of strong religious beliefs has not been reported before. There are, however, studies in which quality of attachment has been associated with the quality of religious beliefs (Kilpatrick and Shaver, 1990, 1992; Mickelson et al., 1997). These authors have suggested that the relationship with God in religious people offers security and consolation in times of stress and it provides a secure-base effect. Both characteristics are also essential qualities of attachment relationships. Using the same procedure of splitting the adult attachment total scores into high and low by the median, log linear analysis was performed to see if the

association of strong religious beliefs with quitting smoking persisted after controlling for Adult Attachment. The association persisted (Partial $\chi^2 = 8.191$, $p < 0.05$), suggesting that the influence of this variable is independent of the quality of adult attachment measured by this instrument. However, after controlling for social class, the association of smoking during pregnancy with strong religious beliefs was no longer significant, suggesting that in this sample social class was the strongest predictive factor for continuing smoking in pregnancy.

The significant difference between non-smokers and the other two groups in the Adult Attachment style instruments allowed us to reject the null hypothesis, suggesting a significant association of insecure attachment and smoking even if subjects stop smoking during pregnancy. The predominant Compulsive Self-reliance pattern of attachment was similar for smokers and quitters, both scoring higher than non-smokers on this sub-scale, suggesting that this might be a common pattern for all smokers, independently of their smoking behaviour during pregnancy. However, on the sub-scale Use of Attachment Figure smokers scored significantly higher than quitters, suggesting that there may be some differences in their attachment style which need to be further explored. These findings are consistent with those of study 1, suggesting that women who smoke during pregnancy have less supportive relationships and less supporting partners compared with non-smokers and quitters. However, when the effect of social class was controlled for, the association with insecure attachment was no longer significant. In this sample, the effect of social class appeared to be the most powerful determinant of the risk for continuing smoking. Social class has been reported as a powerful predictor of risk of

continuing smoking in previous studies including study 1 of this research programme. Some reasons which may explain the marked effect of social class may be the associated low educational attainment and different health beliefs.

Being a pilot study, self-report questionnaires were used to explore the possible association of attachment factors with smoking behaviour in pregnancy. Use of other methods such as the Adult Attachment Interview (AAI; George et al, 1985) and larger samples may provide firmer evidence of possible links between attachment insecurity and smoking. The small sample size may also explain the lack of significant differences on the Maternal-Fetal Attachment scale, which did not support the initial hypothesis about maternal-fetal attachment as a relevant factor associated with smoking during pregnancy. Previous reports regarding this association have not been conclusive (Hilton and Condon, 1989). Attachment to the husband and to the woman's mother are positively correlated but not with maternal-fetal attachment (Zachariah, 1994). The use of psychological mechanisms to deny the risks of smoking has been reported in smokers in the general population (Lee, 1988; Halpern, 1994) and it might be that women who smoke during pregnancy make extensive use of such mechanisms to suppress the emotional and cognitive conflicts associated with their smoking behaviour. This phenomenon has been called internal cognitive dissonance. It was proposed by Festinger (1957) to understand cognitive processes occurring in the subject when confronted by opposite and incompatible cognitions such as, for example, smoking and risk of lung cancer. Bowlby (1982) suggested that, in insecurely attached individuals, the use of defence mechanisms such as defensive exclusion operates in a similar way in order to deal with cognitions and

perceptions which are threatening. Defensive exclusion has some similarities with the cognitive processes occurring when cognitive dissonance arises in the individual. Both require some level of awareness of the conflicting cognition and in both there is a tendency to diminish internal tension by reducing the cognitive dissonance. Defensive exclusion, from this point of view, can be seen as a mechanism of dissonance reduction. Maybe the detection of this kind of phenomenon in a larger sample of women will help to determine the role of cognitive dissonance reduction in pregnant women who smoke. It could be that pregnant women with insecure attachment, in the context of poor quality of marital relationship, make extensive use of a dissonance reduction mechanism in order to continue smoking as a coping strategy for stress, despite knowing the risk to the fetus. From a theoretical point of view, there are many ways of reducing cognitive dissonance, basically decreasing dissonant cognitions and increasing consonant cognitions. From this point of view the underestimation of health risk for the fetus in women who smoke as well as a less marked maternal-fetal attachment could both be seen as cognitive dissonance reduction mechanisms. An evaluation of these mechanisms plus a more reliable evaluation of adult and maternal-fetal attachment, together with an independent evaluation of the quality of the marital relationship, will give greater precision in testing the hypotheses linking attachment patterns and smoking.

There was a trend in the smokers group to have higher scores on the screening instrument for personality disorders (SCID-II-PQ). Because it tends to be over inclusive, it has been suggested by some authors that the validity of these instruments can be improved by using stricter criteria, (Hyler et al, 1992). However, when stricter criteria were applied in

this sample, the difference was no longer significant. Previous findings in the general population had suggested an association between smoking and personality disturbances (Patton et al., 1997; 1993). The instrument used in this study detects personality disorders, thus, a subject has to meet several criteria to be considered a probable "case". Probably this is not the most suitable instrument to detect less severe personality traits which can still be relevant in determining dysfunctional behaviour. Therefore, together with increasing the sample size in the next study, a personality assessment more suitable for a non-clinical sample was used.

In terms of psychiatric symptoms, the General Health Questionnaire (Goldberg, 1972) did not show significant differences between groups, although the general level of symptomatology was above five points, suggesting some level of distress in the women. A higher proportion of smokers also reported the use of non-prescribed drugs, mainly cannabis, which is also consistent with an increased level of stress in these women.

In conclusion, the objectives of this preliminary study were largely accomplished. It was possible to test the hypothesis regarding the role of attachment in smoking behaviour in pregnancy. There were suggestive trends in the Adult Attachment evaluations, although this was not the case with the Maternal-Fetal Attachment assessment. Social class was the most powerful risk factor in this study. The sample was small and other, more appropriate instruments are necessary to confirm the validity of these preliminary findings. In the next and final study attachment and smoking in pregnancy are examined using a better evaluation of adult attachment, a more suitable personality assessment and

an independent and standardised evaluation of the quality of the marital relationship. The presence of cognitive dissonance phenomena in women who smoke is also explored, which may help to explain the observed dissociation between reported feelings of attachment to the baby-to-be and the inability to abstain from smoking.

Chapter 11. Study 4: Smoking during pregnancy and Maternal Attachment Patterns.

11.1 Abstract

In the three previous studies several variables were found to be associated with smoking in pregnancy that other authors have previously reported as risk factors, such as low socio-economic status, an unsupportive partner and unplanned pregnancy. Preliminary findings regarding the role of attachment factors in the inability to stop smoking during pregnancy were not conclusive. The purpose of this study is to further explore and test the relevance of attachment factors in the genesis and maintenance of this intransigent health behaviour. Method: three groups of pregnant women were recruited from the ante-natal clinic of King's College Hospital, London: a group of smokers (n=27), a group of non-smokers (n=23) and a group of "quitters" (n=27) defined as women who stopped smoking because they were pregnant. The assessments were: the Maternal-Fetal Attachment Questionnaire (Condon, 1993), the Adult Reciprocal Attachment Questionnaire (West and Sheldon, 1994), the Bedford Square Adult Attachment Style Interview (Bifulco et al., 2002) and the Adult Attachment Questionnaire (Hazan and Shaver, 1987) A socio-demographic and obstetric assessment was carried out using a study file which also included questions about estimation of risk about smoking specifically designed to detect cognitive dissonance phenomena (McMaster and Lee, 1991). A specific standardised scale was used to determine marital dysfunction, the Golombok Rust Inventory of Marital State (GRIMS: Rust et al., 1988). Psychiatric

symptomatology was assessed by questionnaire using the General Health Questionnaire (Goldberg, 1972). Personality Factors were assessed using the Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck, 1975). Results: Smokers were more likely to be classified as having an insecure attachment pattern in all the Adult Attachment evaluations. Smokers scored lower than the other two groups on Maternal-Fetal "attachment" (Emotional bonding). They were more likely to be scored as "cases" of marital dysfunction on the GRIMS. There was evidence of cognitive dissonance regarding smoking in pregnancy in smokers, as they consistently estimated a low risk for the fetus' health. Smokers scored higher on neuroticism and psychoticism on the EPQ. Quitters scored higher on extraversion. In terms of socio-demographic characteristics and psychosocial characteristics, smokers were more likely to be British or European white women and more likely not to have an academic qualification. Smokers were from a lower social class and more likely to have an unemployed partner. They were less likely to be pleased with the baby, more likely to have contemplated a termination of pregnancy, and less likely to have plans to breastfeed. Smokers were also less likely to live with a partner, more likely to have a partner who smoked, more likely to have both parents who smoked, and more likely to report sexual abuse in the past. Multivariate analysis using Discriminant Function Analysis produced three variables which can predict better the smoking behaviour of women during pregnancy: educational attainment, Avoidant Attachment style and having contemplated termination of pregnancy. An alternative predictive model was obtained by combining samples from study 3 and 4 including those variables in which data was available. Three variables better predicted smoking status in this alternative model, educational attainment,

Avoidant Attachment style and having a partner who smokes.

11.2 Introduction

Over the last three decades there have been radical changes regarding the social acceptability of smoking behaviour. In the 1950's, cigarette smoking was so pervasive that it was regarded as a natural behaviour, not only socially acceptable but also physically harmless and culturally attractive. Male and female mass media heroes displayed confidence and sophistication when lighting up and exhaling smoke. The cigarette was a symbol of strength, status and well-being (Coambs et al., 1989).

Now things have changed in most developed and developing countries. Cigarettes are no longer offered in every social encounter and smoking is not permitted in many public places. Smoking is increasingly regarded as unacceptable behaviour, leading to the establishment of progressively stricter non-smoking policies in work and public places. Many people nowadays maintain smoke-free zones not only at work but at home. Tobacco companies are now facing costly litigation in courts regarding the costs of ill-health produced by cigarette smoking (Associated Press, 1998).

What is now particularly different is that the reaction of the non-smoker is no longer neutral. While objecting to the behaviour of smokers in restaurants and other public places, increasing evidence of the harmful effects of passive smoking has led the non-smoker to believe the smoker is not only irresponsible but pathological and antisocial.

Thus, the hero has now become stigmatised and smoking, in a short space of time, has moved from being an everyday habit and custom towards a social designation as a pathological behaviour (Coambs et al., 1989).

This change in the social perception of smoking is very important because smoking behaviour has become a social issue in the sense of requiring explicit approval from others in social contexts, and consequently, requiring consideration for others from the smoker. This change is particularly relevant in the context of pregnancy in which not only are pregnant women socially protected from smoke-contaminated environments but also smoking in pregnancy has become much more a deviant and undesirable behaviour. One could speculate that this change would be more extreme in societies in which motherhood is the central role of women and the fetus is regarded as having an individual status of its own. This could be the case in study 2, with a sample of Chilean woman in a Catholic country, among whom the prevalence of smoking in pregnancy was comparatively lower than in their European or North American counterparts. Similarly Mexican women showed a very high rate of smoking cessation during pregnancy, although their previous smoking prevalence was much higher than in the Non-Hispanic American women control group (Camilli et al., 1994)

In more socially restrictive settings smoking during pregnancy could be regarded as a more deviant behaviour and thus create greater tension in the smokers. In the Chilean sample we found a high prevalence of postnatal emotional disturbances which is consistent with this hypothesis. In both previous studies in British women similar socio-

demographic characteristics were found to be associated with smoking in pregnancy, such as low socio-economic status or low educational attainment, and these findings are consistent with other studies in Britain (HEA, 1996). What is new in this approach is the exploration of differences in the quality of the marital relationship, which were found in study 1, and also in study 3. There were no significant differences in the maternal-fetal "attachment" assessment in the pilot study, but it was thought such differences might emerge with larger samples of subjects. The presence of significant differences in the adult attachment evaluations, together with the findings of poor quality marital relationships among smokers, influenced the design of the final study, which again tested the association of insecure attachment and continuing smoking during pregnancy. There was already some evidence for this in study 3, but the effect of social class was predominant. This final study used a larger sample size, adding some assessments which might be relevant in interpreting the results: an independent assessment of quality of marital relationship (GRIMS); an assessment of personality related to constitutional factors and also widely used in smoking studies (EPQ); and two additional adult attachment assessments, which allowed a more precise attachment classification. One of the additional adult attachment assessments is a semi-structured interview (Bifulco et al, 2002) and the other is a self-report questionnaire to assess specifically Avoidant Attachment Style in adults (West and Sheldon, 1994).

The use of four different instruments to assess attachment factors in the context of pregnancy may provide a clearer picture of their relevance in smoking behaviour. Attachment dimensions are important in the marital relationship because they relate to

the issue of having and providing security in a reciprocal way with the partner (West and Sheldon, 1994). Attachment is also important in determining the care-giving pattern within which the mother responds to the demands of her baby. Maternal-fetal emotional bonding is the natural emotional precursor to the relationship with the baby, perhaps in a purer and more fantasised state, without the intense interaction that characterises and shapes the attachment relationship after the birth of the baby. Ainsworth (1991) has suggested that changes which occur during pregnancy may activate attachment behaviour in the woman, and this activation may be particularly intense if there are additional adverse conditions such as social deprivation and lack of a supportive figure. Attachment styles are basically strategies for having an attachment figure available to provide security. The activation of attachment systems is closely related to stress responses, thus, from this perspective attachment styles are stress coping strategies which will be displayed preferentially in response to separation from the attachment figure, or lack of an attachment figure, in times of distress or need. Smoking is used preferentially by women as a coping strategy for stress. If one accepts that pregnancy is a psychologically vulnerable period for women, as several authors have suggested (Ainsworth, 1991; Russell, 1974) then one should expect that several coping mechanisms will be activated during this period. Smoking may be one coping mechanism preferentially used by women, but one could predict that only those women with a good quality of emotional support and secure attachment will be able to abstain from smoking. In the previous review of attachment system activation and deactivation in Chapter 4, Bowlby (1982) suggested that only when the attachment system is deactivated by the presence of the attachment figure is the subject free again to display effective exploratory and care-

giving behaviour. These behavioural sequences can be observed in the Strange Situation procedure (Ainsworth, 1978) and in animal models (Reite et al., 1978). If smoking had been the main coping strategy used previously by a woman and attachment systems have been activated during the pregnancy without a good quality of support from close relationships to deactivate them, then this pregnant woman may probably continue to smoke.

In study 3 no significant differences were found in the Maternal-Fetal scores between smokers and non-smokers and quitters. This could be interpreted as a sign of some kind of dissociation in women who smoke, because although it was not evaluated specifically, most women in Britain are aware of the risks of smoking during pregnancy (HEA, 1996). It will be important in the next study to look more specifically for indicators of awareness of health risks in smoking women, and to see if they differ from quitters in particular. The concept of cognitive dissonance (Festinger, 1957) has been used to describe the cognitive processes involved when dealing with two conflicting and incompatible contents present at the same time in the mind. Wicklund and Brehm (1974) summarise the main aspects of Cognitive Dissonance Theory :

"Cognitive dissonance is a motivational state brought about when a person has cognitive elements that imply the opposite of one another. As a tension state, it may be said to persist until cognitive work lowers the relative number or importance of relevant cognitions discrepant with the elements that are most resistant to change. This cognitive work can consist of adding consonant cognitions, subtracting dissonant cognitions and

decreasing the importance of dissonant cognitions. The resistance-to-change concept is the hallmark of the theory, for without it the unique predictions of the theory would be impossible; it provides an organising point for determining the magnitude of dissonance and how dissonance will most likely be reduced. Finally, the evolved theory which we discuss here is also a theory about personal responsibility. Dissonance reduction may be observed only to the degree that the individual sees himself as responsible for bringing cognitions into an inconsistent relationship."

Studies of cognitive dissonance in smokers show that they use denial or dismissal of available information as a cognitive dissonance reduction mechanism to deal with the cognition of their smoking habit and the knowledge of its harm (Lee, 1988) The underestimation of risk has been considered a typical way in which cognitive dissonance reduction is expressed (McMaster and Lee, 1991). This process has been suggested as a defence mechanism against the unpleasant feeling originating in the presence of contradictory thoughts at the same time. Defensive exclusion is a similar mechanism suggested by Bolwby (1982) to deal with feelings, perceptions and cognitions which do not fit well with a determined internal working model in individuals in whom this pattern has become particularly rigid, usually as a result of trauma or loss. Similar principles such as resistance-to-change would also operate in this defensive mechanism. A preliminary evaluation of cognitive dissonance is carried out in this study, regarding the health risk to the fetus of smoking in women, by asking them to estimate the relative risk to the health of the baby (McMaster and Lee, 1991). This may allow an explanation of the dissociation observed so far in women who smoke, whose maternal-fetal attachment

is similar to quitters, but who carry on smoking knowing that is risky for the fetus.

11.3 Objectives

Given the preliminary findings of an interaction between insecure attachment and smoking during pregnancy in study 3, this association is further explored to test the basic hypotheses. Thus, the objectives of this study are:

11.3.1 To test the hypothesis that attachment factors are relevant in determining smoking behaviour during pregnancy.

11.3.2 To explore the role and relative importance of other variables such as personality factors, quality of marital relationship and cognitive dissonance on smoking during pregnancy.

11.3.3 To test by multivariate analysis to what extent psychological variables including attachment patterns, are as relevant as socio-demographic ones in determining risk of continuing smoking during pregnancy.

11.3.4 To suggest some further areas of research on preventive and treatment interventions for smoking during pregnancy, based on the findings regarding attachment factors.

11.4 Methods

11.4.1 The sample

The sample consisted of women recruited from the antenatal clinic of King's College Hospital, London. There were three groups: a group of smokers (n=27) a group of non-smokers (n=23) and a group of quitters, who stopped smoking because they were pregnant (n=27). A smoker was defined as any woman who was smoking at least 1 cigarette/day at the time of the interview, a quitter was defined as any woman who was a smoker and had stopped smoking before the third trimester of pregnancy. The women were asked to give informed consent and invited to take part in the study if they had good command of English. Recruitment was completed in March 1996. . No participant was reimbursed for being included in the study.

Sample size was estimated using as a reference the results from the preliminary study in which significant differences were found in Adult Reciprocal Attachment Style. Thus, when the sample size in each of the three groups is twenty, a one-way analysis of variance will have 80% power to detect at the 0.05 level a difference in means characterised by a Variance of means, $V= \Sigma(\mu i - \mu)^2 \backslash G$ of 38.218, assuming that the common standard deviation is 15.0 (Nquery advisor 2.0, 1998).

11.4.2 Data collection

Participants were recruited if they were in the third trimester of pregnancy at the time

they attended for a routine check at the antenatal clinic. Women were selected according to smoking status, obtained from the obstetric notes, and were then approached in the waiting room. After giving informed consent, participants completed a set of self-report questionnaires while they were at the clinic. The interviewer stayed with them while they completed the questionnaires to give any required clarification. To complete the assessment, they were subsequently interviewed by the investigator, who was blind to the results of the questionnaires.

11.5 Instruments

The instruments used were:

11.5.1 The Maternal-Fetal Attachment Questionnaire (Condon, 1993) is a 19-item self-report questionnaire designed to measure the parental-foetal relationship which produces a total score ranging from 19 to 95 (Cronbach's alpha 0.818) . The instrument allows comparison of individuals and groups in terms of "attachment" to the fetus (emotional bonding to the fetus). It has two subcales, quality of attachment (10 items), and time spent in attachment mode (8 items). Each item has a five-point response scale ranging from "almost all the time", "very frequently", "frequently", "occasionally", to "not at all". Other items ranged from "very positive" to "very negative" or from "very weak or non-existent" to "very strong". The rating scale has ten reverse scoring items. Item 3 is presented as a sample item :

(3) Over the past two weeks my feelings about the baby inside me have been:

( ) Very positive

( ) Mainly positive

( ) Mixed positive and negative

( ) Mainly negative

( ) Very negative

See appendix A.

11.5.2 The Adult Reciprocal Attachment Questionnaire (West and Sheldon-Keller, 1994)

is a 43-item self-report questionnaire designed to measure attachment to the main attachment figure in adulthood, the partner (Minimal acceptable alpha 0.7). It is divided into nine sub-scales: five Dimensions of Attachment: Proximity Seeking (3 items), Separation Protest (3 items), Feared Loss (3 items), Availability of Attachment Figure (3 items) and Use of Attachment Figure (3 items); and four Patterns of Attachment: Angry Withdrawal (7 items), Compulsive Care Giving (7 items), Compulsive Self-Reliance (7 items) and Compulsive Care Seeking (7 items). Each item has a five-point response scale ranging from "strongly disagree" "disagree", "somewhat agree and some what disagree", "agree", to "strongly agree". Rating scale has reverse and direct codings in each subcale. Total score allows comparison of individuals and groups in terms of insecurity of attachment.

Items 42 (from proximity seeking subscale) and 36 (from angry withdraw subscale) are presented as sample items.

"42. When I am anxious I desperately need to be close to my attachment figure.

strongly disagree

disagree

somewhat agree and somewhat disagree

agree

strongly agree"

"36. I often feel angry with my attachment figure without knowing why.

strongly disagree

disagree

somewhat agree and some what disagree

agree

strongly agree"

See Appendix B.

11.5.3 The Adult Avoidant Attachment Questionnaire (West and Sheldon-Keller, 1994) is a 22-item self-report questionnaire originally designed to measure the Avoidant pattern

of attachment in individuals who had no partner and were not able to distinguish a particular attachment figure. Here, it was used to measure the dimensions of this particular attachment style in each individual, whether or not they had a sexual partner. It is divided in four subscales wich represent four assessed dimensions: Maintains Distance in Relationships (6 items)(Cronbach's alpha 0.88), High Priority of Self-Sufficiency (6 items)(Cronbach's alpha 0.74), Attachment Relationship as a Threat to Security (5 items)(Cronbach's alpha 0.79) and Desire for Close Affectional Bonds (5 items) (Cronbach's alpha 0.72). Each item has a five-point response scale ranging from "strongly disagree" to "strongly agree". Total score allow comparison of groups in terms of this insecure avoidant attachment pattern. Item 11 is presented as a sample item.

"11. I get my sense of security from myself

strongly disagree

disagree

somewhat agree and some what disagree

agree

strongly agree"

See Appendix C.

11.5.4 The Adult Attachment Instrument (Hazan and Shaver, 1987) is a forced choice questionnaire between three options, each of them representing an attachment pattern:

Secure, Insecure Avoidant, or Anxious-Ambivalent. This is based on the theory that love in adulthood is similar to the kind of love which an infant feels for her care-giver in terms of seeking and maintaining close physical proximity. Proportions in each of the three categories can be compared between groups. One of the three items is presented as a sample item.

"1. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets to close, and often, love partners want me to be more intimate than I feel comfortable being." (insecure avoidant attachment style choice). See Appendix D.

11.5.5 The Adult Attachment Style Interview (Bifulco et al., 2002) is a semi-structured interview which is taped and then rated according to a coding system in which ten dimensions of attachment relationships in adults are assessed. The interviewer asks participants to describe their friendships, romantic relationships and feelings about the importance of close relationships. If participants reported not to have a romantic relationship, there were asked for their reasons. They were asked about loneliness, shyness, they degree of trust of others, their impressions of other people's evaluations of themselves and their hopes of any changes in their social lives. Two main categories are the outcome: standard (secure) and non-standard (insecure). The dimensions assessed are: Mistrust of Others, Attitudinal Constraints Regarding Confiding, Insecurity of Attachment, Self-Reliance, Overall fear of Intimacy, Fear of Sexual Intimacy, Desire for

Engagement/Emeshment, Ability to Make and Maintain Relationships, Inconsistency Between Attitudes and Behaviour, Anger in Relationships. It is based in the four-category model developed by Bartholomew and Horowitz (1991). A transcript of an interview and the coding and rating scale is provided in Appendix E.

11.5.6 The Golombok Rust Inventory of Marital State (GRIMS: Rust et al., 1988) is a 28-item standardised self-report questionnaire created and validated in British population to evaluate quality of marital relationship. It has a 4-point response scale ranging from "Strongly disagree", "disagree", "agree" to "strongly agree". It produces a total score ranging from 0 to 84 points. It has a cut-off point for cases of marital dysfunction (>33), thus allowing comparison of the proportion of cases of marital dysfunction between groups. Total scores may also be used to compare quality of marital relationship between groups. (Cronbach's alpha value 0.89). See appendix F

11.5.7 The General Health Questionnaire (GHQ; Goldberg, 1972) is a validated self-report questionnaire to assess psychiatric symptoms. Since its creation, it has been used for over 30 years in several clinical and non-clinical settings and there are validated versions in several languages. This time the 30 item version was used. It produces a total score ranging from 0 to 30 points. It has a 4-point response scale ranging from "better than usual" to "much less than usual" or "not at all" to "much more than usual" or " more satisfied" to "much less satisfied", etc. It has a cut-off point which determines high risk of presenting anxious or mood disorders (>5 points). It has four sub-scales for anxiety,

depression, somatic symptoms, and sleep disorders. The authors of the GHQ-30 have reported test-retest reliability at six months ranging from 0.85 to 0.92. See Appendix G.

11.5.8 The Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck, 1975) is a well known 90-item self-report forced choice questionnaire which has been widely used in clinical and non-clinical settings. It assesses three basic dimensions of personality: Neuroticism, Psychoticism and Extraversion. Total Scores on each of these dimensions can be compared between groups (Cronbach's Alpha = 0.74 for males and 0.68 for females). See Appendix H.

11.5.9 The Socio-Demographic and Obstetric Questionnaire (Clare and Cairns, 1978; Kumar and Robson, 1984). It is a 87-item questionnaire specifically designed for the purpose of the study. It explores sociodemographic and obstetric variables as well as questions about smoking, drinking and drug use. It also includes items in which the estimated risk of having problems with the baby if the woman continues smoking and/or drinking during the pregnancy. These questions were designed to explore the presence of cognitive dissonance in women who smoke during the pregnancy (adapted from McMaster and Lee, 1991). It also includes questions about the role of health professionals in the assessment, advice or offering treatment to stop smoking. There are also questions about early childhood and personal history. Each item has a particular format and is analysed separately. See Appendix Ib

11.5.10 An open qualitative interview regarding smoking during pregnancy, based on Glasser and Strauss' Grounded Theory (1967). According to Strauss and Corbin (1994) this is a general methodology for developing theory that is grounded in data (in this case recorded interviews) systematically gathered and analysed. They proposed that the suggested guidelines and procedures "allow much latitude for ingenuity and are an aid to creativity". In this methodology, these authors suggest that theory may be generated initially from the data, or, if existing (grounded) theories seem appropriate to the area of investigation, then these may be elaborated and modified as incoming data are meticulously played against them. Hence, this approach may be used to explore the presence of cognitive dissonance regarding smoking in pregnancy. Open questions about smoking habits and ideas about smoking in pregnancy were investigated in the group of smokers. The recorded interviews were analysed and categories relevant to the cognitive dissonance process were produced. Several ways of reducing cognitive dissonance are described. See the discussion section.

11.6 Statistical Analyses

SPSS for Windows, version 6.0, was used for data analyses. Student's t-test and one-way ANOVA procedures were used to analyse differences between means. Chi-square tests were used to analyse categorical effects, i.e. differences between proportions. Multivariate analysis were carried out using hierarchical log linear analyses, logistic regression and discriminant function analysis.

11.7 Results

11.7.1 Sociodemographic and psychosocial variables

Women who smoked during pregnancy were more likely to be in a lower social class compared with non-smokers and quitters (according to the British classification of social class by occupation). Smokers and quitters were more likely to be British or European white women and smokers were more likely not to have any academic qualification. Smokers were more likely to have an unemployed partner. Smokers were less likely to live with the partner and both smokers and quitters were more likely to have a partner who smoked. Smokers were more likely to have both parents who smoked and more likely to report sexual abuse in the past, they were also more likely to have been separated from their mothers before the age of 11. See Table 11.1 below.

Table 11.1 Sociodemographic and psychosocial variables (proportions (%))

	Non-smokers	Quitters	Smokers	Significance
Lower social class	3/20 (15%)	8/26 (31%)	16/20 (80%)	$\chi^2 = 19.3$ $p < 0.0001$
British or European Caucasian origin	14/23 (61%)	24/27 (89%)	25/27 (93%)	$\chi^2 = 13.1$ $p < 0.01$
Some academic qualification	19/23 (83%)	26/27 (96%)	14/27 (52%)	$\chi^2 = 15.5$ $p < 0.001$
Unemployed partner	1/20 (5%)	2/27 (7%)	7/21 (33%)	$\chi^2 = 8.5$ $p < 0.05$
Cohabiting with the partner	17/23 (74%)	25/27 (93%)	15/27 (56%)	$\chi^2 = 9.6$ $p < 0.01$
Separated from mother before age 11.	4/23 (17%)	3/27 (11%)	11/27 (41%)	$\chi^2 = 7.2$ $p < 0.05$
Partner who smokes	3/22 (14%)	11/26 (42%)	18/25 (72%)	$\chi^2 = 16.2$ $p < 0.001$
Both parents who smoke	5/23 (22%)	8/27 (30%)	16/27 (60%)	$\chi^2 = 10.2$ $p < 0.05$
Reporting sexual abuse during childhood	1/23 (4%)	2/27 (7%)	7/27 (26%)	$\chi^2 = 6.3$ $p < 0.05$

11.7.2 Obstetric variables

Women who smoked during pregnancy were less likely to be pleased with the baby and more likely to have contemplated termination in this pregnancy. They were also less likely to have plans to breastfeed the baby and less likely to have a planned pregnancy. See Table 11.2 below.

Table 11.2 Obstetric variables (Proportions (%))

	Non-smokers	Quitters	Smokers	Significance
Reporting being pleased with the baby	21/23 (91%)	24/27 (89%)	17/27 (63%)	$\chi^2 = 8.2$ $p < 0.05$
Contemplated termination of pregnancy	4/23 (17%)	0/27 (0%)	11/27 (41%)	$\chi^2 = 14.4$ $p < 0.001$
Planning breastfeeding	23/23 (100%)	27/27 (100%)	21/27 (78%)	$\chi^2 = 10.6$ $p < 0.01$
Planned pregnancy	12/22 (55%)	19/27 (70%)	9/27 (33%)	$\chi^2 = 7.5$ $p < 0.05$

11.7.3 Attachment Variables

Women who smoked during pregnancy scored significantly lower than non-smokers and quitters in the Maternal-Fetal Attachment Instrument. See Table 11.3 below.

Table 11.3 Maternal-Fetal Attachment Scores. (Means (SD))

	Non-smokers n = 23	Quitters n = 27	Smokers n = 26	Significance
Maternal-Fetal Attachment score	77.2 (6.0)	77.3 (7.5)	72.6 (8.6)	$F = 3.2$ $p < 0.05$

Women who smoked during pregnancy were more likely to be classified as insecure in the Hazan and Shaver Adult Attachment Questionnaire. See Table 11.4 below.

Table 11.4 Insecure Attachment according to the Adult Attachment Questionnaire (Hazan and Shaver). (Proportions (%)).

	Non-smokers	Quitters	Smokers	Significance
Classified as insecure	9/22 (40%)	8/23 (35%)	18/25 (72%)	$\chi^2 = 7.7$ $p < 0.05$

Smokers also scored significantly higher on the West and Sheldon Reciprocal Attachment Questionnaire indicating that smokers are more likely to be insecurely attached to their respective attachment figures than non-smokers and quitters. Smokers also scored significantly higher on the Avoidant Attachment scale suggesting that this is the predominant attachment style in smokers. On both scales, smokers scored higher on sub-scales denoting activation of attachment system such as feared loss, separation protest and less availability of the attachment figure. They also scored higher on compulsive self-reliance and angry withdrawal as the main traits of the insecure attachment. Smokers belonged mostly to an avoidant insecure attachment style category. See Tables 11.5 and 11.6 below.

Table 11.5 Adult Reciprocal Attachment Questionnaire scores (West and Sheldon) (Means (SD)).

Subscale	Non-smokers	Quitters	Smokers	Significance
Proximity seeking	7.6 (3.4)	8.2 (2)	9.4 (2.5)	NS*
Separation protest	6.8 (2.9)	6.2 (2.4)	8.7 (8.7)	F = 4.6 p < 0.05
Feared loss	5.7 (2.9)	4.8 (1.9)	6.9 (3.2)	F = 3.5 p < 0.05
Availability of the attachment figure	5.5 (2.4)	5.0 (1.9)	7.7 (2.6)	F = 7.9 p < 0.001
Use of attachment figure	5.4 (2.8)	4.9 (1.8)	6.3 (2.4)	NS*
Compulsive self-reliance	14.8 (5.6)	13.1 (3.5)	17.6 (4.8)	F = 5.1 p < 0.01
Compulsive care-seeking	15.0 (5.7)	14.5 (3.3)	16.8 (4.6)	NS*
Angry withdrawal	14.3 (5.0)	12.1 (3.5)	18.9 (6.0)	F = 11.1 p < 0.001
Compulsive care-giving	22.0 (6.9)	22.0 (5.0)	20.4 (3.8)	NS*
Total score	97.4 (24)	90.9 (12.6)	112.8 (22.9)	F = 6.8 p < 0.01

Table 11.6 Avoidant attachment score (West and Sheldon) (Means (SD))

Sub-scale	Non-smokers	Quitters	Smokers	Significance
Attachment as a threat	7.8 (2.1)	7.4 (2.3)	10.1 (1.9)	F = 11.8 p < 0.001
Desire for close affectionate bonds	11.2 (5.9)	8.5 (8.6)	15.3 (15.3)	F = 7.1 p < 0.01
Maintaining distance	11.4 (10.7)	10.7 (4.9)	15.7 (6.0)	F = 5.9 p < 0.01
High priority self sufficiency	15.4 (5.2)	14.3 (3.8)	15.5 (2.7)	NS*
Total scores Avoidant scale	45.6 (14.0)	40.8 (9.7)	56.7 (13.2)	F =10.9 p < 0.001

*NS: Non-significant.

Women who smoked during pregnancy were more likely to be classified as "non-standard" in their adult attachment style on the Adult Attachment Style Interview, indicating that there is a predominance of insecure attachment in smokers. Smokers also were more likely to present narrative inconsistencies between behaviour and attitudes. See Table 11. 7 below.

Table 11.7 Classification of Adult Attachment according to the Adult Attachment Style Interview (Bifulco et al., 2002) (Proportions (%)).

	Non-smokers	Quitters	Smokers	Significance
Non-standard (insecure) Attachment	1/21 (5%)	1/24 (4%)	15/21 (71%)	χ^2= 33.6 p < 0.0001
Narrative inconsistencies	1/21 (5%)	1/24 (4%)	10/21 (48%)	χ^2 = 26.7 p < 0.001

In order to see if the differences in attachment persisted after controlling for social class, log linear hierarchical analyses were performed, dividing the subjects between those who were in a lower social class and those who belonged to a higher social class according to the partner's occupation (manual and non-manual) (Registrar General, 1971). After controlling for social class using this criterion, the association between insecure attachment and smoking during pregnancy was still significant (Partial $\chi^2 = 16.1$, $p < 0.01$).

A log linear analysis was also performed to test whether the association between low maternal-fetal attachment and smoking during pregnancy remained significant after controlling for insecurity in adult attachment; this initial association was no longer significant. The association between Insecure Adult attachment and smoking during pregnancy remained significant after controlling for Maternal-Fetal Attachment (Partial $\chi^2 = 7.6$, $p < 0.05$). This suggests that Maternal-Fetal Attachment is dependent on adult insecure attachment in its interaction with smoking.

11.7.4 Marital relationship

Women who smoked during pregnancy scored significantly higher on the GRIMS and they were more likely to be considered a "case" of marital dysfunction according to the standard criteria of this instrument (Rust et al., 1988). Subjects who did not complete this questionnaire because they had split up with their partner were included as cases of marital dysfunction. See Table 11.8 below.

Table 11.8 Marital relationship according to GRIMS (Means (SD) and proportions

(%))

	Non-smokers	Quitters	Smokers	Significance
GRIMS score	25.8 (11.8) n = 22	23.4(10.9) n = 27	38.2(12) n = 20	F = 10.3 p < 0.0001
Cases of marital dysfunction	6/23 (26%)	6/27(22%)	20/27 (74%)	χ^2 = 18.2 p < 0.001

In order to see if the association with quality of the marital relationship remained significant after controlling for adult attachment, a log linear hierarchical analysis was performed and both variables showed a significant association with smoking in pregnancy (Partial χ^2 = 13.9, $p < 0.001$ and Partial χ^2= 6.4, $p < 0.05$, respectively) indicating that both poor quality of marital relationship and insecure attachment interact independently with smoking in pregnancy.

11.7.5 Psychiatric and personality variables

The three groups scored on average above 5 on the General Health Questionnaire but there were no significant differences between them. Smokers scored significantly higher on the neuroticism and psychoticism scales of the Eysenck Personality Questionnaire. Quitters scored significantly higher on extraversion. See Table 11.9 below.

Table 11.9 Personality factors according to the EPQ and psychiatric symptoms according to the GHQ (Means (SD)).

	Non-smokers	Quitters	Smokers	Significance
Extraversion EPQ Score	12.7 (6.9)	15.4 (3.6)	11.4 (5.0)	F = 5.1 p < 0.01
Neuroticism EPQ Score	11.8 (4.1)	9.4 (5.3)	14.4 (5.5)	F = 6.1 p < 0.01
Psychoticism EPQ Score	2.3 (1.9)	2.3 (1.8)	4.6 (4.6)	F = 6.1 p < 0.01
GHQ Score	7.2 (6.9)	6.3 (6.1)	10.1 (7.9)	NS*

*NS: Non-significant.

In order to see if insecurity in attachment was associated with these personality dimensions the EPQ scales were divided into low and high scores using the statistical median, and a log linear hierarchical analysis was then performed. The significant association between neuroticism and smoking during pregnancy persisted after controlling for insecurity in attachment (Partial $\chi^2 = 6.7$, $p < 0.05$) and the association between insecurity of attachment and smoking during pregnancy also persisted after controlling for neuroticism (Partial $\chi^2 = 27.7$, $p < 0.0001$). The association between psychoticism and smoking during pregnancy was no longer significant after controlling for insecure attachment. The association between extraversion and quitting smoking persisted after controlling for insecure attachment (Partial $\chi^2 = 8.1$, $p < 0.05$).

11.7.6 Estimation of risk for the baby due to cigarette smoking and alcohol drinking

Using a method adapted from McMaster and Lee (1991) smokers were asked to estimate

the risk of having problems with the baby due to smoking during pregnancy by deleting a number in a scale from 0 (no risk) to 100 (certain to happen). Smokers estimated the risk significantly lower than non-smokers and quitters. Using the same method, smokers also underestimated the risk of having problems with the baby due to drinking during pregnancy compared with non-smokers and quitters. See Table 11.10 below.

Table 11.10 Estimation of risk to the baby from cigarette smoking and drinking alcohol during pregnancy (Means (SD)).

	Non-smokers	Quitters	Smokers	Significance
Estimation of risk from smoking during pregnancy	66.8 (16.4)	65.9 (20.6)	43.5 (20.4)	F = 11.8 p < 0.0001
Estimation of risk from drinking alcohol during pregnancy	48.0 (21.9)	53.7 (24.0)	37.7 (18.4)	F = 3.7 p < 0.05

Smokers were asked to complete a self-report questionnaire which was included in the sociodemographic assessment. When asked about their reasons for continuing to smoke during pregnancy, 52% (n=27) answered either that they preferred not to talk about it or that they did not know (33% and 19%, respectively). 21 smokers (78%) had been advised to stop smoking by their GP or midwife, and the same proportion (78%) believed that smoking was potentially harmful for the baby. However, only one of the 27 smokers reported that she had been offered specialised support for quitting smoking. Six subjects from the smokers group (22%) reported not having specific information about risk to the baby, but this was not significantly different from the proportion of quitters who said they

were not informed about specific risks (22%). Smokers started smoking at a younger age than quitters and their cigarette consumption was significantly higher prior to the pregnancy (see Table 11.11 below). There were no significant differences in alcohol consumption between the three groups.

Table 11.11 Some differential features regarding smoking habits (Proportions (%) and Means (SD)).

	Non-smokers	Quitters	Smokers	Significance
Subjects without information about specific risk to the baby	1/8 (13%)	5/19 (26%)	6/25 (24%)	NS*
Subjects who believe that smoking in pregnancy is potentially harmful for the baby	23/23 (100%)	25/27 (92%)	21/27 (78%)	$\chi^2 = 13.1$ $p < 0.01$
Age when first cigarette smoked	14.5 (1.29)	18.6 (3.6)	14.4 (3.0)	$F = 11.7$ $p < 0.001$
Subjects smoking more than five cigarettes per day prior to pregnancy	0/23	20/27 (74%)	26/27 (96%)	$\chi^2 = 5.2$ $p < 0.05$

11.7.7 Multivariate analysis

In order to see which variables better predicted which subjects would be able to stop smoking during pregnancy and which subjects would not, we performed a logistic regression analysis (Everitt, 1989). The model that best predicted smoking behaviour during pregnancy included two variables: the Adult Reciprocal Attachment Questionnaire total score and the Avoidant Attachment Questionnaire total score. This analysis indicates that insecurity in Adult Attachment, particularly the avoidant type, is the best psychological variable to predict which women are going to continue smoking if they become pregnant. Attachment factors have not been reported before in connection with smoking behaviour in pregnancy and our findings point to a potentially important variable which can contribute to the inability to stop smoking in pregnant women in Britain.

In order to accomplish a more integrative data analysis, a three-group discriminant function analysis was carried out. Index subject scores in terms of smoking status (non-smokers, quitters and smokers) were the dependent variable and those factors which on their own more strongly predicted outcome were the independent variables, such as social class (manual or non-manual), educational attainment (possession of an "O" level or not), avoidant attachment style(avoidant attachment scale score), quality of marital relationship (being a case of marital dysfunction or not, according to GRIMS score), smoking status of the partner (smoker and non-smoker), having contemplated termination

of pregnancy (yes or no), and estimation of risk to the baby from smoking (estimation scored on a 100 points scale).

The relative importance of the predictive variables to the two discriminant functions derived is shown in Table 11.12. The first of these functions discriminated women who continue smoking during pregnancy from other participants and the second women who quit smoking from the others.

Table 11.12. Variables examined as predictors of smoking status during pregnancy in discriminant function analysis, index subjects.

	Standardized canonical discriminant function coefficients	
Predictor Variables	Function I	Function II
Smoking status of the partner	0.42	0.82
Marital dysfunction according to GRIMS scale	0.36	0.36
Educational attainment (possession of an academic degree from "o" level onwards or not)	-0.59	0.26
Avoidant Attachment scale score	0.44	-0.38
Having contemplated termination of pregnancy	0.48	-0.40
Social Class	N.S.	
Estimation of danger to the fetus from smoking	N.S.	
Adult Attachment scale total score	Reciprocal N.S.	

Non-smokers (n = 23) Quitters (n = 27) Smokers (n = 27)

Function I: X^2 (70.1), $p < 0.0001$ Function II: X^2 (10.8), $p < 0.05$

Using the stepwise variable selection method (with the selection rule of minimizing Wilk's Lambda) five variables were selected for being important contributors to the function which discriminated women who continue smoking during pregnancy. One was a social environmental factor, having a partner who smokes, another was a socio-demografic factor, the lack of any academic degree, which reflects a poor educational attainment. The other three also contributed independently to predict smoking status and they reflect relational factors such as having contemplated termination of pregnancy, having a high score in the avoidant attachment scale and being a case of marital dysfunction according to the GRIMS. The rest of the variables did not contributed further to minimize Wilk's Lambda and were excluded from the analysis (F to enter < 3.84).

These five variables also discriminated women who quit smoking from the rest. Having completed at least an "O" level seems to have a protective role as well as not having a dysfunctional couple relationship, having a lower score in the avoidant attachment scale and not to have contemplated termination of pregnancy. Finally, although compared with smokers, quitters have less often a partner who smokes, they have more often a partner who smokes than non-smokers, which also contributes to discriminate quitters from non-smokers.

By applying this discriminant function analysis, the percent of "grouped" cases correctly classified was 66.2% (see table 11.13). Thus, this model might predict the smoking status of any pregnant women by knowing the value of these five independent variables.

However, membership to the group of quitters and smokers is predicted correctly more often than to the group of non-smokers (70.4 % and 77.8% vs. 47.8%).

Table 11.13. Classification results for cases selected for use in the analysis. Number and proportion (%) of cases correctly classified.

		Predicted Group Membership		
Actual Group	No. of Cases	Non-smokers	Quitters	Smokers
Non-smokers	23	11 (47.8 %)	9 (39.1 %)	3 (13 %)
Quitters	27	7 (25.9 %)	19 (70.4 %)	1 (3.7 %)
Smokers	27	2 (7.4 %)	4 (14.8 %)	21 (77.8 %)

Percent of "grouped" cases correctly classified: 66.23%

In light of the main purpose of this study, which is to explore the relevance of attachment variables in smoking behaviour during pregnancy, particularly in order to discriminate women who continue smoking during pregnancy from women who are able to quit, a new discriminant function analysis was carried out, this time not considering the group of non-smokers.

Therefore, only smokers and quitters were considered for a new two-group discriminant function analysis. Index subject scores in terms of smoking status (quitters and smokers) were the dependent variable, and independent variables those factors which on their own more strongly predicted outcome, such as social class(manual or non-manual),

educational attainment (possession of any academic degree or not), avoidant attachment style (avoidant attachment scale score), quality of marital relationship (being a case of marital dysfunction or not, according to GRIMS score), smoking status of the partner (smoker and non-smoker), having contemplated termination of pregnancy (yes or no), age when first cigarette smoked (years) and estimation of risk to the baby from smoking (estimation scored on a 100 points scale).

The relative importance of the predictive variables to the discriminant function derived is shown in Table 11.14.

Table 11.14. Variables examined as predictors of smoking status in pregnancy in discriminant function analysis, index subjects.

Predictor Variables	Standardized canonical discriminant function coefficients Function I
Educational attainment (possession of an academic degree from "o" level onwards or not)	-0.75
Avoidant Attachment scale score	0.59
Having contemplated termination of pregnancy	0.65
Marital dysfunction according to GRIMS scale	N.S.
Social Class	N.S.
Estimation of danger to the fetus from smoking	N.S.
Age when first cigarette smoked	N.S.
Adult Reciprocal Attachment scale total score	N.S.

Quitters (n = 27) Smokers (n = 27)

Function I: X^2 (47, 5), $p < 0.00001$

Using the stepwise variable selection method (with the selection rule of minimizing Wilk's Lambda) three variables were selected for being important contributors to the function which discriminated women who continue smoking during pregnancy from

women who were able to quit. One was a sociodemografic factor, the lack of any academic degree (at least an "O" level), which reflects a poor educational attainment. The other two variables reflect relational factors which also contributed independently to predict continuing smoking during pregnancy, having contemplated termination of pregnancy and having a high score in the avoidant attachment scale. The rest of the variables did not contributed further to minimize Wilk's Lambda and were excluded from the analysis (F to enter < 3.84).

Conversely, having at least an "O" level, having a lower score in the avoidant attachment scale and not having contemplated termination of pregnancy seem to have a protective role in terms of being able to quit smoking during pregnancy,

By applying this discriminant function analysis, the percent of "grouped" cases correctly classified was 88.9 % (see table 11.15.). Thus, this model might predict women's ability to stop smoking during pregnancy (quitters) better than the first analysis (100% vs. 70.4%), however, the percentage of smokers correctly classified (77.8%), remained unchanged.

Table 11.15. Classification results for cases selected for use in the analysis. Number and proportion (%) of cases correctly classified.

		Predicted Group Membership	
Actual Group	No. of Cases	Quitters	Smokers
Quitters	27	27 (100 %)	0 (0 %)
Smokers	27	6 (22.2 %)	21 (77.8 %)
Ungrouped cases (non-smokers)	23	14 (60.9 %)	9 (39.1 %)

Percent of "grouped" cases correctly classified: 88.9 %

11.7.8. The insecure avoidant attachment in the Adult Reciprocal Attachment Questionnaire (ARAQ) (West and Sheldon, 1992).

Although the total scores of the ARAQ were reported to have significant differences between the three groups in Table 11.5 ($F = 6.8$, $p < 0.01$), evidencing that insecure attachment is associated to smoking status in pregnancy, this significant difference in total score was produced by significant differences in five sub-scales , Separation protest ($p<0.05$), Feared loss ($p< 0.05$), Availability of attachment figure ($p < 0.001$), Compulsive self-reliance ($p< 0.01$) and Angry withdrawal ($p< 0.001$). Smokers scored higher than non-smokers and quitters in all these sub-scales. These sub-scales are insecure attachment dimensions or insecure attachment style components. Availability of the attachment figure is an attachment dimension which is relevant to the activation of the attachment system. If it is high, it means there is no attachment figure available and

the attachment system will be activated. Separation protest and Feared loss are indicators of activation of the attachment system related to the anxious-ambivalent insecure attachment style. Compulsive self-reliance and Angry withdrawal are dimensions of insecure avoidant attachment style. In order to determine what sub-scales are more important to discriminate between the groups, particularly between smokers and quitters, a discriminant function analysis was carried out.

Index subject scores in terms of smoking status (non-smokers, quitters and smokers) were the dependent variable and all the sub-scales with significant differences were the independent variables. The relative importance of the predictive variables to the only discriminant function derived is shown in Table 11.16.

Table 11.16. Variables examined as predictors of smoking status in pregnancy in discriminant function analysis, index subjects.

	Standardized canonical

discriminant function coefficients

Predictor Variables	Function I
Angry withdrawal	1.0
Availability of attachment figure	N.S
Feared loss	N.S
Compulsive self-reliance	N.S.
Separation protest	N.S.

Non-smokers (n=23) Quitters (n = 27) Smokers (n = 27)

Function I: X^2 (19.3), $p < 0.0001$

From this analysis it is clear that the main contribution to discriminate between the groups is made by the Angry withdrawal sub-scale, which is a central dimension of the insecure avoidant attachment style. Smokers scored higher in this dimension and quitters scored even lower than non-smokers.

11.7.9 Combining samples from study 3 and 4

Considering that similar evaluations were carried out in studies three and four, a combination of the two samples was attempted in order to increase statistical power and

to test the main hypotheses of this thesis, which is the relevance of attachment variables in smoking behaviour during pregnancy.

Seven independent variables in which significant differences were previously reported between the group of smokers, quitters and non-smokers were re-analysed combining both samples. The summary of this re-analysis is presented on Table 11.17.

Table 11.17. Re-analysis of variables by combining samples from study 3 and 4 (Means (SD) or Proportions (%))

	Non-smokers	Quitters	Smokers	Significance
Social Class (manual vs No-manual occupation)	14/42 (33%)	14/43 (33%)	31/48 (64%)	X2=12.5 p< 0.01

Educational Attainment (possesion of an "o" level or not)	35/42 (83%)	39/44 (89%)	29/47 (62%)	X2= 10.6 p< 0.01
Attachment style according to Hazan and Shaver Attachment Questionnaire (secure vs. insecure ambivalent and avoidant.)	33/42 (79%)	31/44 (71%)	18/48 (38%)	X2 = 22.4 p< 0.001
Avoidant Attachment Questionnaire total score	43.9 (11.0)	41.6 (10.6)	51.0 (12.0)	F = 8.8 p< 0.001
West and Sheldon Reciprocal Attachment Questionnaire total score	96.7 (21.2)	97.7 (16.9)	110.2 (17.8)	F = 7.5 p< 0.001
Contemplated termination of pregnancy (yes or no)	6/42 (14%)	4/44 (9%)	15/48 (31%)	X2 = 8.1 p < 0.05
Having a partner who smokes (yes or no)	7/42 (17%)	19/44 (42%)	36/48 (75%)	X2 = 30.9 p< 0.00001

In consideration of the main purpose of this study, which is to explore the relevance of attachment variables in smoking behaviour during pregnancy, particularly in order to discriminate women who continue smoking during pregnancy from women who are able to quit, a new discriminant function analysis was carried out. Statistical power was increased by combining the two samples from study 3 and 4 and non-smokers were left out of the analysis.

Therefore, only smokers and quitters were considered for a new two-group discriminant function analysis. Index subject scores in terms of smoking status (quitters and smokers) were the dependent variable, and independent variables those factors which on their own more strongly predicted outcome, such as social class (manual or non-manual), educational attainment (possession of an "o" level or not), avoidant attachment style (avoidant attachment scale score), smoking status of the partner (smoker and non-smoker), having contemplated termination of pregnancy (yes or no), Attachment style according to the Hazan and Shaver Attachment Questionnaire (secure, insecure anxious-ambivalent and insecure avoidant) and West and Sheldon Adult Reciprocal Attachment questionnaire total score. The relative importance of the predictive variables to the discriminant function derived is shown in Table 11.18.

Table 11.18. Variables examined as predictors of smoking status in pregnancy in discriminant function analysis, index subjects. Combined sample.

	Standardized canonical discriminant function coefficients
	Function I
Predictor Variables	
Educational attainment	-0.52

(possession of an "o" level or not)	
Avoidant Attachment scale score	0.67
Having a partner who smokes	0.60
Social Class	N.S.
Hazan and Shaver Attachment style	N.S.
Having contemplated termination of pregnancy	N.S.
Adult Reciprocal Attachment scale total score	N.S.

Quitters (n = 43) Smokers (n = 47)

Function I: X^2 (31.3), $p < 0.00001$

Using the stepwise variable selection method (with the selection rule of minimizing Wilk's Lambda) three variables were selected for being important contributors to the function which discriminated women who continue smoking during pregnancy from women who were able to quit. One was a sociodemografic factor, the lack of any academic degree (at least an "O" level), which reflects a poor educational attainment. The other two variables reflect a relational factor (a high score in the avoidant attachment

scale) and a social environmental factor (having a partner who smokes) which also contributed independently to predict continuing smoking during pregnancy. The rest of the variables did not contributed further to minimize Wilk's Lambda and were excluded from the analysis (F to enter < 3.84).

Conversely, having at least an "O" level, having a lower score in the avoidant attachment scale and not having a partner who smokes seem to have a protective role in terms of being able to quit smoking during pregnancy,

By applying this discriminant function analysis, the percent of "grouped" cases correctly classified was 73.6 % (see table 11.19.). Thus, by combining samples from study 3 and 4 the percentage of smokers correctly classified was higher (83%) than in study 4, however, the percentage of quitters correctly classified was lower (64%).

Table 11.19. Classification results for cases selected for use in the analysis. Number and proportion (%) of cases correctly classified. Combined sample.

		Predicted Group Membership	
Actual Group	No. of Cases	Quitters	Smokers

Quitters	44	28 (63.6 %)	16(36.4 %)
Smokers	47	8 (17.0 %)	39(83.0 %)
Ungrouped cases (non-smokers)	42	32 (76.2 %)	10 (23.8 %)

Percent of "grouped" cases correctly classified: 73.6 %

11.7.10. Qualitative analysis regarding dissonance reduction

Several authors have suggested that underestimation of health risk due to smoking in smokers is a sign of reduction of cognitive dissonance and clear evidence of active cognitive dissonance reduction processes (McMaster and Lee, 1991; Lee, 1988; Halpern, 1994). This pattern of underestimation of risk to the baby's health from smoking was present during pregnancy in smokers. However, this was not the only evidence of cognitive dissonance reduction that was found. In the qualitative interview several other possible methods of cognitive dissonance reduction used by smokers were detected, such as :

- Cutting down,
- Having permission from some important figure (mother, doctor, partner, or midwife)
- Abstention for some periods of time
- Disbelief of the risks
- Disbelief of the accuracy of the information
-Taking medication to decrease smoking effects: iron, vitamins, vitamin c, or special

exercises.

- Seeing the positive side of eventual smoking effects: small babies, premature delivery.

- Changing the environment to reduce extra air pollution

- Not to think about it

- Justifying smoking behaviour by feeling too upset to stop or by attributing sedative properties to smoking.

- Not realising what it is doing to the baby, "If I saw the baby I would stop (it does not hurt if you do not see)".

11.8. Discussion

Smokers appeared to be a group characterised by relative social, educational and economic deprivation indexed by several socio-demographic variables such as lower social class, fewer academic qualifications and a significant proportion of women not living with their partner. If they had a partner, he was more likely to be unemployed. The marital relationship was more likely to be reported as containing severe conflict and to be of poor quality as indexed by the GRIMS scores. Regarding their cultural background smokers were more likely to be British or European Caucasian women. All these characteristics have been reported previously in studies in British populations, including studies 1 and 3 and the HEA studies (1996), and they are all strongly associated with persistent smoking during pregnancy. In addition, smokers were more likely to have a partner who smoked, which has also been previously reported as a risk factor strongly associated with continuing to smoke in pregnancy. Condon and Hilton (1989) have

suggested that advice and support from the partner is an influential factor in smoking behaviour during pregnancy. However, one would not expect that support to quit smoking from a partner who also smokes would be significant in the context of a poor relationship. The finding that smokers were more likely to have two parents who smoked, could suggest the role of an early smoking environment as a modelling influence on the subject or, alternatively, there may be a role for genetic factors in smoking behaviour. Recent studies have failed to find a direct influence of genes in smoking behaviour and current evidence suggests that factors such as personality, psychopathology, and nicotine response interact as mediators of any genetic predisposition to smoking (Heath et al., 1995; Gilbert et al., 1995). Separation from the mother before the age of 11 and childhood sexual abuse were both more likely to be reported by smokers than those in the other groups. Both of these factors have been described as psychosocial risks for the development of psychopatology and personality disturbances (Brown and Harris, 1978, Farmer and McGuffin, 2003). Although no significant differences were found in psychological symptoms on the GHQ-30 (Goldberg, 1972) we did find that smokers scored higher on the neuroticism and psychoticism subscales of the EPQ (Eysenck, 1975) and they also had a high prevalence of poor marital relationships on the GRIMS, which can also be considered as a negative outcome. The failure to establish good quality support relationships associated with insecure attachment classification in adults (Bifulco et al., 2002) could be considered as a sequel to problems in psychological development (Bowlby, 1982). Conflicting and unstable internal working models of relationships are a usual outcome of these developmental problems. The formation of attachment patterns is a dynamic process; the higher prevalence of sexual abuse in this group of women may

reflect either an early vulnerability or lack of protective figures. Sexual abuse is a major traumatic factor, which may have contributed to adult insecurity in attachment relationships. A log linear analysis was performed to see if the association of smoking with childhood sexual abuse was determined by insecurity in adult attachment. The interaction of smoking during pregnancy and childhood sexual abuse was no longer significant when insecurity in adult attachment was controlled for. This analysis suggests that the effect of childhood sexual abuse on smoking during pregnancy was determined by insecurity in adult attachment, which is consistent with the previous argument.

Personality factors like neuroticism and psychoticism, as well as extraversion, have been reported to be associated with smoking behaviour in the general population in previous studies (Patton et al., 1997, 1993; Eysenck, 1965). However, in this study, extraversion was associated only with the group of smokers who stopped smoking. This difference between smokers regarding smoking behaviour in pregnancy has not been reported before. The interactions of neuroticism with continuing smoking, and quitting smoking with extraversion, remained significant after controlling for insecurity in attachment. These findings might be interpreted as the influence of some constitutional factors in determining smoking behaviour which act independently and in interaction with developmentally learned patterns of behaviour such as attachment patterns. It has been suggested that the Eysenck personality dimensions of neuroticism, psychoticism and extraversion-introversion are based in constitutionally determined characteristics (Eysenck, 1975). The association between smoking during pregnancy with psychoticism was no longer significant after controlling for insecure attachment. The strong link

between adult attachment and smoking behaviour during pregnancy, after controlling for personality factors, suggests that the attachment dimension is a relevant independent factor associated with continuing smoking during pregnancy.

In order to see which variables better predicted which subjects would be able to stop smoking during pregnancy and which subjects would not, a logistic regression analysis was performed (Everitt, 1989). The model that best predicted smoking behaviour during pregnancy included two variables: the Adult Reciprocal Attachment Questionnaire total score and the Avoidant Attachment Questionnaire total score. This analysis indicates that insecurity in adult attachment, particularly the avoidant type, is the best psychological variable to predict which women are going to continue smoking if they become pregnant. Attachment factors have not been reported before in connection with smoking behaviour in pregnancy and these findings point to a potentially important variable which can contribute to the inability to stop smoking in pregnant women in Britain.

All the groups scored above 5 on the GHQ-30, indicating a more than normal level of psychological symptomatology. There were similar findings in the three previous studies, particularly in study 1 in which indirect indicators of distress were found, and in study 3 also carried out in a British population, in which all groups scored over 5 on the GHQ-30 as well. These findings are consistent with those of several authors who have commented on the emotional upheaval experienced during the developmental changes associated with becoming a mother (Raphael-Left, 1991) and the relative psychological vulnerability of women during the pregnancy and the postpartum period (Kumar et al.,

1996). The consistent high scoring on the GHQ and other indicators of distress in all four samples might be interpreted as a general sign of psychological distress for all women, maybe associated with the developmental changes triggered by the pregnancy, independently of the time of the assessment and the cultural setting. Some women will have less internal and/or external resources than others to cope with new demands, particularly if there is lack of support from close relationships. In this context it is not surprising that smoking is used as a coping strategy for stress or to deal with negative feelings in general (Lucas, 1993).

The differences detected in variables such as planned pregnancy, having contemplated termination, being pleased with the baby and planning to breastfeed already suggested a different attitude towards the pregnancy and the baby among the group of smokers. There were similar findings in the previous studies in British women; in both studies smokers more frequently reported having an unplanned pregnancy. These factors have been reported by other authors as well (HEA.1994, 1996; Hilton and Condon, 1989). In the final study this different attitude was also evidenced by the lower scores of smokers on the Maternal-Fetal Attachment scale. All these findings concerning a more negative attitude towards the pregnancy and the fetus may represent evidence of a particular relationship with the baby-to-be in women who do not abstain from smoking in pregnancy. A significant correlation was found between Maternal-Fetal attachment scores and level of marital dysfunction as assessed by the GRIMS (Pearson Corr. Coef. = -5.5, $p < 0.0001$). This strong correlation supports the preliminary hypothesis from study 1 that in women who smoke during pregnancy there is a particular configuration of

relationships with significant figures, which tends to be of a comparatively poor quality. Maternal-fetal attachment depends on the quality of adult attachment, and its interaction with smoking during pregnancy was found to be no longer significant when insecurity in adult attachment was controlled for. It seems that the quality of the relationship with the main attachment figure in adults (usually the partner) takes over and influences the quality of the attachment relationship with the fetus in most pregnant women. Therefore the assessment of the adult attachment pattern will probably be the most reliable index of the emotional disposition of the woman towards the fetus. This is highly consistent with previous studies of children's attachment development which have stressed the crucial importance of the mother's ongoing active supervision and sensitivity, not only to create but to maintain infant secure attachment behaviour, and how the parent's responsiveness to the child's needs is strongly dependent on the maintenance of a positive relationship between the parents over a extended period of time (Heinike, 1995; Heinike and Guthrie, 1992). Furthermore, Goldberg and Easterbrooks (1984) have demonstrated the relevance of a good quality marital relationship in determining children's security of attachment. The findings described here are concordant with these studies in which marital quality and attachment security in the infant have been found to be related. The effect on the infant's attachment is mediated by the quality of parenting from the main attachment figure, usually the mother; therefore, a good quality of relationship with the partner will strongly affect her ability to have a good emotional disposition towards the baby, influencing her care-giving behaviour even before the baby is born. The findings regarding adult attachment patterns provide additional support for these observations and also provide a model for understanding the interaction between these different close

relationships. In the present study, the quality of marital relationship was strongly correlated with adult attachment (Corr, Coef. Pearson = 0.42, $p < 0.01$) using GRIMS total scores and Adult Reciprocal Attachment Total scores, and even more strongly correlated with the Avoidant Adult Attachment scale total scores (Corr. Coef. Pearson = 0.59, $p < 0.01$) suggesting that women presenting insecure avoidant attachment styles were also much more likely to have a very poor quality of marital relationship or even to be separated from the father of the baby. In general, these are also the women who could not abstain from smoking in their pregnancy. This association had already been found in the first study (Chapter 8), so the findings regarding poor quality marital relationships in women who continue smoking are consistent with the earlier study of British women. From an Attachment Theory point of view, this is not surprising because the relationship with the sexual partner in adults is considered the most important in terms of attachment (West and Sheldon, 1994; Ainsworth, 1991; Owens et al., 1995).

Several authors have suggested that underestimation of health risk due to smoking in smokers is a sign of reduction of cognitive dissonance and clear evidence of active cognitive dissonance reduction processes (McMaster and Lee, 1991; Lee, 1988; Halpern, 1994). This pattern of underestimation of risk to the baby's health from smoking was present during pregnancy in smokers. However, this was not the only evidence of cognitive dissonance reduction that was found. In the qualitative interview several other possible methods of cognitive dissonance reduction used by smokers were detected, such as :

- Cutting down,

- Having permission from some important figure (mother, doctor, partner, or midwife)
- Abstention for some periods of time
- Disbelief of the risks
- Disbelief of the accuracy of the information
- Taking medication to decrease smoking effects: iron, vitamins, vitamin c, or special exercises.
- Seeing the positive side of eventual smoking effects: small babies, premature delivery.
- Changing the environment to reduce extra air pollution
- Not to think about it
- Justifying smoking behaviour by feeling too upset to stop or by attributing sedative properties to smoking.
- Not realising what it is doing to the baby, "If I saw the baby I would stop (it does not hurt if you do not see)".

All these ways of dealing with cognitive dissonance have been described by Festinger (1957) as behavioural changes, changes of cognition and circumspect exposure to new information and new cognitions. Wilklud and Brehm (1974) summarised these operations of reduction of cognitive resonance as "... cognitive work consisting of adding consonant cognitions, increasing the importance of consonant cognitions, subtracting dissonant cognitions and decreasing the importance of dissonant cognitions." The magnitude of these operations will depend of the magnitude of the cognitive dissonance.

Thus, findings from the qualitative interview gave more evidence of the active presence

of cognitive mechanisms to deal with the incompatible facts of being pregnant and continuing to smoke, disregarding the risks for the fetus. Although significant differences were found in the Maternal-Fetal Attachment measure this difference was no longer significant when controlling for adult attachment, indicating that although one could detect differences in the emotional bonding with the fetus in mothers who smoked, this was not the only factor to explain their behaviour. There were higher order factors, such as insecurity in adult attachment style, personality traits such as neuroticism, and the effect of an adverse social environment as well as emotional support deprivation. Moreover, several cognitive and behavioural mechanisms were involved in the process of reduction of cognitive dissonance in smokers.

A particular cognitive style in the smoker group was also supported by the finding of a significantly higher rate of behavioural and attitudinal inconsistencies in the Adult Attachment Style interview (Bifulco et al., 2002). The cognitive aspect of adult attachment expressed as a particular verbal reporting style for attachment relationships has been widely explored by several authors such as Main et al. (1985). These authors have used the reporting styles of subjects to develop their attachment classification. Thus, the current reporting style regarding past attachment relationships is carefully analysed in terms of its level of coherence and internal consistency from a linguistic point of view. In this study cognitive mechanisms may play a relevant role in allowing smokers to continue smoking considering that they have the same level of information about baby's risk as quitters. The difference is how the information is used in the context of the pregnancy. No evidence was found of current cognitive dissonance regarding smoking or

inconsistencies in the adult attachment style interview in women who stopped smoking. From the cognitive dissonance perspective, women who stopped smoking, by doing this, eliminated the source of cognitive dissonance, thus, they subtracted the more important dissonant cognition.

It is remarkable that in spite of the fact that most smokers were advised to stop smoking by a health professional and that most of them believed that smoking was harmful for the baby, only one reported having been offered specialised support to stop smoking. This is consistent with what has been reported in recent surveys in British populations in which the number of pregnant women receiving any advice on smoking from health professionals has fallen from over a half (51%) in 1992 to 39% in 1996 (HEA, 1996). It seems that although the emphasis in most interventions has been put mainly on the delivery of information and simple advice, even this has not been carried out systematically. There is no evidence that psychological and psychosocial factors have been taken into account in a systematic way when delivering interventions in cessation programs. The need to take into account these factors is increasingly evident after the poor results of programmes based only on delivering information or simple advice. From the perspective of the present findings, factors such as providing support for the mother and the couple, involvement of the partner or other substitute support figures, enhancement of a good maternal-fetal attachment relationship and development of more adaptive coping strategies as an alternative to smoking might be important in helping these women to stop smoking during pregnancy. There are some previous reports in which the use of the scan as a mean to promote maternal-fetal attachment has showed

some encouraging results in cessation rates (Reading et al., 1982; Reading and Cox, 1982). However, the effect of an adverse social environment and relationship problems interacting with personality factors represents a special challenge for any cessation program intervention at this level. Emotional vulnerability during pregnancy may produce activation of attachment behaviour in women and this will require the presence of attachment support figures (Ainsworth, 1991). Smoking behaviour can be a learned strategy to deal with this need of support, particularly if poor quality of the relationship, or the absence of one, activates the attachment system in a more intense way. High scores on the GHQ and other indirect signs of distress observed in all four studies indicate raised levels of psychological distress and that might have a different resolution in the socially deprived group of smokers. It is not surprising then, that in spite of the fact that pregnancy is considered to be a particularly good moment to quit for women who smoke before the pregnancy (Walsh and Redman, 1993; Alexander, 1987) most of them fail to do so. Furthermore, for women who smoke during pregnancy smoking is not a neutral activity but one that generates active cognitive mechanisms to reduce the internal conflict produced by their smoking behaviour in the context of the pregnancy.

The hypothesis regarding the association of insecure attachment in women who continue smoking during pregnancy has been supported by the findings. Quality of adult attachment, particularly insecure attachment of the avoidant type, has proved to be relevant in predicting the risk of not being able to stop smoking in pregnancy. Other psychological variables such as poor quality of marital relationship and neuroticism were also strongly associated with continuing smoking during pregnancy. Adult attachment

dimensions variables such as the insecure avoidant attachment style, toghether with sociodemographic variables such as educational attainment and other environmental and relational variables such as having contemplated termination of pregnancy or having a partner who smokes, have been used to construct a powerful predictor model of risk of continuing smoking in pregnancy, independently of the previously described and well-known socio-demograhic variables.

The next chapter contains a review of the limitations of this research and some possible implications for future research and design of interventions for preventive and treatment purposes.

Chapter 12. Summary and Conclusions.

12.1 Findings and limitations of the study

The major findings of the four studies described in Chapters 8-11 are discussed in this section.

The factors which were associated most strongly with smoking in pregnancy were socio-demographic variables such as low socio-economic status, low educational attainment, and indices of interpersonal as well as personal difficulties, e.g. unplanned pregnancy and poor quality or absence of relationship with the partner. Previous research into smoking during pregnancy has focussed mostly on socio-demographic factors and only recently on individual characteristics of women who continue smoking. There have been some indications that relationship factors may play a role in smoking behaviour in women. This theme was explored in the studies described in Chapters 10 and 11, which explored the quality of the relationship with the partner and with the baby-to-be and the quality of adult attachment relationships. There was a strong association between adult insecure attachment and the inability to stop smoking during pregnancy; maternal-fetal attachment was also diminished in smokers, but this relationship was dependent on adult attachment insecurity. In addition there was a strong association between poor quality of the marital relationship and smoking during pregnancy which was consistent with the findings regarding insecure adult attachment. Insecure avoidant attachment in adults was strongly correlated with poor quality of marital relationship and women with these characteristics

tended to continue smoking during pregnancy. All these findings supported the hypothesis of this thesis that relationship factors are at least as important as socio-demographic ones in determining the risk of continuing smoking during pregnancy.

Cigarette consumption it is not an emotionally and cognitively neutral behaviour for women who smoke during pregnancy. Women who continue smoking during pregnancy made extensive use of cognitive dissonance reduction mechanisms to deal with the internal tension aroused by continuing to smoke in pregnancy and knowing about the risks for the baby. They seem to differ substantially in this cognitive pattern from women who were smokers but stopped smoking when they became pregnant. They did not differ in their level of knowledge about the risks but the way in which they avoided or reduced cognitive dissonance was quite different. Quitters had been able to stop smoking and they did not need to reduce any dissonance because there was none. Smokers who were unable to give up showed a tendency generally to process information differently, and there was evidence of a higher rate of inconsistencies regarding behaviours and attitudes in the narratives of the Adult Attachment Interview (Bifulco et al., 2002).

In all the studies there was some evidence that, independently of their smoking status, most pregnant women were in a slightly increased state of psychological distress, evidenced by a high rate of psychological symptoms at interview (Chapters 8 and 9) or average GHQ scores higher than five (Chapter 10). This is consistent with previous claims that pregnancy is an emotionally vulnerable period for most women. In the previous review (Chapter 1) there was evidence that women who smoke see smoking as a

means of dealing with specific negative emotions and stress. In the qualitative interviews there was additional evidence supporting this view.

The smoking status of the partner was also associated with continuing smoking in pregnancy and this is consistent with previous reports regarding a smoking environment at home or at work as a risk factor for continuing smoking. However, the smoking status of the partner appears to be more complex in terms of risk, because it also points to the importance of this close relationship.

Smokers reported a higher consumption of cigarettes prior to the pregnancy and a younger age of smoking debut. This could be related with a higher rate of nicotine dependence but in the qualitative interview only a few smokers referred to nicotine withdrawal symptoms as the main reason for continuing smoking. On the other hand, some of the women who stopped smoking were able to do so despite recalling withdrawal symptoms; they were basically driven by the desire to protect their baby. This is consistent with a previous study by Lucas (1993) who reported that many of the women who stopped smoking during pregnancy did so despite evidence of considerable nicotine withdrawal symptoms.

Personality factors such as neuroticism and extraversion appeared to be related to smoking behaviour in pregnancy in a very particular way. Neuroticism was strongly associated with continuing smoking during pregnancy and high extraversion scores appeared in women who had smoked and had been able to stop when they became

pregnant. Psychoticism, which was initially found to be associated with continuing smoking, was no longer significant after controlling for insecurity of attachment. These findings are of particular interest because neuroticism and extraversion have been reported to be associated with smoking in the general population in several previous studies, but no such dissociation of personality characteristics in relation to smoking behaviour in pregnancy has been reported before. These findings are consistent with Patton et al. (1997) who found two clusters of smokers in a general population sample in terms of personality characteristics: neither cluster differed on extraversion-related measurements but there was one smaller cluster (28.8% of smokers) which was higher on neuroticism-related characteristics and they were also more likely to have symptoms of alcoholism and to have more drinking-related problems (although they did not actually drink more). They were also younger, had lower income and were antisocial. These authors suggest that there is a sub-population of smokers who are more anxious than others and who have strong antisocial tendencies. In the present study these differences were not explored in more depth but it might be that neuroticism in women who smoke is part of a cluster of personality characteristics in which the prior preferential use of cigarette smoking as a coping mechanism is very prevalent. This is an open matter for further research.

Cultural settings appear to have a strong influence on smoking behaviour in pregnancy. In study 2, in the sample of Chilean women there was a very low prevalence of smoking during pregnancy despite the high previous life prevalence rate of smoking in these women. All the Chilean women who continued smoking during pregnancy presented

psychological symptoms or disorders after the birth of the baby and, although the sample was small, they presented additional special characteristics that distinguished them from the rest of the sample (e.g. previous use of psychotropic drugs and alcohol, working outside the home, and previous treatment for psychological problems). Similar smoking behaviour in Mexican American women living in USA suggested that the ability to stop smoking in pregnancy may be strongly determined by cultural background. A replication of the study using a larger sample of smokers will be necessary to confirm these preliminary observations.

The initial hypothesis regarding the influence of attachment variables on smoking behaviour in pregnancy was confirmed; insecurity of adult attachment was the most important variable to predict inability to stop smoking in women during pregnancy, particularly the avoidant type. Although the quality of maternal-fetal emotional bonding was also a relevant variable, it was dependent on the quality of the marital relationship and eventually on the quality of adult attachment. Regarding the nature of the association between the measure of perceived quality of marital relationship (GRIMS), and adult attachment evaluations, there was an overlap between them, but both variables retained their own significant effect on smoking during pregnancy after having been controlled for in log linear analyses. This indicates that the adult attachment evaluation is more than just a measure of the quality of the marital relationship and that it reflects some individual characteristics which are specific to the attachment construct.

12.2 Some limitations of the study

There were four main categories of limitations of the research described in this thesis:

12.2.1 Limitations of the design of each of the studies.

The first group of limitations derive from the fact that the first and second studies were not originally designed to explore smoking behaviour but to explore prospectively the level of psychiatric morbidity in pregnant women and then to follow them up after the birth of the baby. The smoking status data were less detailed than one would have wanted, for example, in study one, the exact number of women who stopped smoking because of the pregnancy was not clear. Since both studies were carried out some years previously it was not possible to rectify this deficit in the databases. Despite this limitation, and given the fact that in both studies there were assessments of the quality of the relationship with the partner and some indicators of the relationship with the baby, it was possible to analyse these data as a preliminary step to studies 3 and 4 (Chapters 10 and 11). Although the instruments used were different, the findings regarding the quality of these important relationships encouraged further exploration of the association between relationship factors and smoking in pregnancy.

12.2.2 Limitations of the different measurements that were used and of the quality of the data obtained.

The second kind of limitations was that different instruments were used in studies 1 and 2

to evaluate particular variables. This was an inevitable consequence of differences in original designs and purposes of the research. For instance, in study 1 the quality of the marital relationship was assessed by semi-structured interview and a self-report questionnaire (MAMA); the first gave categorical data and the second produced a continuous variable. In this study the self-report questionnaire was validated using the assessment from the semi-structured interview. In the second study, the quality of the marital relationship was assessed by a self-report questionnaire (Mausdley Marital Questionnaire) which gave a continuous score. In the third study a standardised self-report questionnaire (GRIMS) was used, which produced continuous as well as categorical data.

The results from all these different measurements are not directly comparable, but the trends that were observed were generally very similar, with the exception of the Chilean sample in which the group of smokers was very small. However, studies 1-3 were preliminary approaches to the final investigation in which the variables of interest were examined using the most appropriate instruments, based on experience from studies 1-3 and reviews of the literature. All of the instruments had already been validated with English-speaking subjects, although some had not been used with pregnant women in Britain.

12.2.3 Limitations of the validity of some measurements, particularly the adult attachment instruments.

Limitations of the validity of some of the measures may be important for several reasons.

First, none of the adult attachment measurements had been applied to British pregnant women before and therefore there was no very reliable information on which to base power calculations to determine sample size. Therefore, it was necessary to conduct a pilot study (study three) to obtain a more accurate estimate of required sample size. Validation of the attachment measures using another adult attachment instrument previously used in British pregnant women, such as the Adult Attachment Interview (Fonnagy and Steele, 1991) was not a feasible alternative due to the high cost and time required for training, administration and rating. However, from a theoretical point of view there is no reason to suppose that the AAI is the best way to assess adult attachment. As discussed before (see Chapter 7), the AAI does not assess actual adult attachment behaviour and attitudes, rather the internal working model regarding attachment is inferred from the narrative's linguistic coherence regarding past attachment relationships. Even instruments based on the same methodology, designed to assess the quality of attachment in current relationships have failed to obtain very high concordance (Owens et al., 1995) with the AAI classifications. This could be interpreted as evidence to support the view that internal working models can change according to the context of the relationship and consequently have different expressions in different relationships. The belief that the primary internal working model is stable and is a determinant of any new close relationship involving attachment dimensions has not been supported by more recent findings (Owens et al., 1995; Waters et al., 1995). Current evidence suggests that processes of co-construction of relationships play a major role not only in children but also in adult attachment formation (Seifer and Schiller, 1995; Owens et al., 1995; Oppenheim and Waters, 1995). Adult attachment is still an area of research in which an

exact operational definition of internal working models has not been reached, thus it is a challenge to measure something that one cannot exactly define. What is important is to keep in mind the distance between attachment measures and the constructs with which they are theoretically linked.

To partially overcome this important limitation we used several adult attachment evaluations: four self-report questionnaires and one semi-structured interview, which in the final analysis were strongly correlated with each other.

12.2.4 Limitations of the power of the statistical calculations.

Limitations regarding the power of the statistical calculations were due to the small sample size of some of the studies, particularly in the second study which was not originally designed to gather a large sample of smokers, and where the prevalence of smoking during pregnancy was low. In the third study, the power calculations were derived from figures taken from Australian studies comparing mothers and fathers, which proved not be a suitable source of reference. A better estimation of sample size and power was obtained in the final study using as a reference scores on the Adult Reciprocal Attachment from study 3, which was more sensitive than the maternal-fetal scales in detecting differences, although not powerful enough to show significance after controlling for social class, using log linear analysis.

With the estimation for minimum sample size that was finally used in study 4, significant differences were found regarding attachment dimensions that persisted even after

controlling for social class. This is potentially an important finding because social class has always been one of the strongest predictors of smoking behaviour. This finding will need to be replicated in future studies using larger sample sizes to improve statistical power.

12.3 Conclusions and implications of this research

This is, to the author's knowledge, the first study to explore smoking behaviour in pregnant women in terms of the quality of close relationships within the framework of Attachment Theory. The findings support the hypothesis concerning the relevance of attachment dimensions in distinguishing which women would be unable to stop smoking when they become pregnant. The insecure avoidant pattern of adult attachment which characterises woman who smoke during pregnancy was also found to be accompanied by some distinctive cognitive mechanisms which allow these women to decrease the internal tension created by two conflicting cognitive behavioural contents: knowledge of the risk for the fetus' health implied by smoking during pregnancy and the fact of continuing smoking.

Many previous studies of women's smoking, and of smoking in general have tended to start from the premise that smoking is a direct response to, and means of coping with, life stressors and negative feelings, and that smokers will tend to increase the number of cigarettes in times of increased pressure. Although there was some evidence to support these ideas in this research, such as direct and indirect indicators of adverse

environmental circumstances and higher levels of distress in these women, there are other factors which also determine smoking behaviour. This approach, whilst clearly describing an important function of cigarettes in the daily life of many women, does not explain why many women in similarly difficult circumstances do not smoke or even stop smoking to protect the baby's health. Despite the prevalent finding that low socio-economic status is strongly associated with smoking and smoking during pregnancy in particular, the equation "poverty = stress = smoking" offers only a partial explanation of smoking during pregnancy. This is because the role of some individual characteristics such as personality factors and personal beliefs, relationship dimensions such us quality of attachment relationships, and cultural background are as important or even more relevant than socio-economic factors alone.

In an extensive study of beliefs about smoking in pregnancy in British women, Lucas (1993) identified that the best predictor of smoking behaviour was the intention to stop based on an assessment of the perceived risks of smoking as opposed to the perceived benefits and personal disadvantages of quitting. Although smokers as a group were not found necessarily to experience more stress or negative feelings than non-smokers, they were much more likely to use smoking as a mechanism to cope with specific negative emotional states. This author also suggests that smokers continue smoking because they have a lower appraisal of the concomitant risks. He also identified social support as an effective stress mitigation factor and a potentially critical factor to help women in reducing cigarette consumption when total abstinence was not a realistic proposition. In this study, the role of risk appraisal and culture-determined beliefs is emphasised in

determining smoking behaviour in pregnancy. Regarding cultural influences, there was evidence from the Chilean study, which found a very low prevalence of smoking in pregnancy, indicating that risk appraisal is influenced by cultural pressures and beliefs. This was consistent with previous reports in Chilean samples and with cross-cultural studies with Latin American women in USA. Furthermore, in Lucas' (1993) study, the nature of the relationships which provided social support was not specified, nor was the interaction of such relationships with personal beliefs. The results described in this thesis are consistent with Lucas' study, and they also provide a deeper insight into the nature of relationships which provide effective emotional support, as well as into the cognitive mechanisms involved in dealing with the contradiction between beliefs and smoking behaviour.

12.4 Attachment Theory as an integrative approach

Despite the limitations mentioned above regarding the measurement of adult attachment, consistent significant differences were found in attachment dimensions between smokers and non-smokers. Attachment Theory can be applied to integrate different findings regarding risk factors associated with continuing smoking in pregnancy. Poor quality, or absence of, emotional support from the relationship with the partner seems to be a common feature in smokers; it also affects the quality of the relationship with the baby-to-be as assessed by the Maternal-Fetal "Attachment" Instrument. The high prevalence of insecure avoidant attachment patterns in women who smoke during pregnancy provides a possible explanation of why these women are involved in relationships which are

unsupportive. The insecure avoidant pattern of relationships in adults as defined by West and Sheldon (1994) is characterised by a difficulty in establishing good quality support relationships, arising from a fear of attachment relationships, so distance from others is maintained, in spite of having an intense desire for close relationships. In their definition of the avoidant type, Bifulco et al. (2002) also add intense distrust and anger towards others. Using this theoretical framework one can detect some of the determinants of poor quality marital relationships in smokers. They do not receive emotional support from their partners and they are unable to get some alternative support from other sources owing to their attachment characteristics. They may have already developed coping mechanisms in which smoking helps them to cope with the negative feelings elicited in such an uncomfortable emotional situation. It is, therefore, understandable how difficult it can be to give up smoking in the context of a poor relationship or in the absence of emotional support, in spite of the knowledge of the risks for the baby. Risk appraisal and beliefs are greatly influenced by culture so the more restrictive the cultural background, the more deviant the smoking behaviour will be considered. Thus one might expect to observe more intense problems in these women and the preliminary findings in the Chilean sample were suggestive of this. Nevertheless, independently of the cultural setting, smoking behaviour seems to elicit internal tension which is dealt with by using several cognitive and behavioural mechanisms to reduce dissonance. Attachment Theory provides a framework to integrate such information processing, considering it as a defence mechanism. Defensive exclusion is one of the mechanisms postulated by Bowlby (1982) and it is closely related to dissonance reduction processes. Individuals with insecure internal working models of attachment can make extensive use of these

mechanisms to maintain an internal coherence in order to provide a feeling of security (Bowlby, 1982). Pregnant smokers were found to be more likely to be insecure avoidant and they probably have been using smoking as a coping strategy long before they became pregnant. Therefore they are likely to continue using this coping strategy in the context of the pregnancy and poor quality relationships. This creates different levels of conflict in each individual, eliciting different levels of reduction of dissonance and defensive exclusion, depending on the intensity of tension aroused by the cognitive dissonance. Quitters solve this situation quite straightforwardly; they change their smoking behaviour by stopping altogether and the internal dissonance is over. However, because they have much better quality relationships and they are secure in their attachment patterns, they are able to obtain emotional support when it is required, and they make use of their attachment figure who is available when needed. Smokers instead have to struggle against social pressures, internal conflicts and their inability to get appropriate support from attachment figures or even the lack of an attachment figure to whom they might turn for support. This situation may create several positive feedbacks which maintain the smoking behaviour. What is clear from this study is that smokers have to try to resolve their dilemma and it seems that they do so by a sort of compromise in which many of them try to cut down temporarily as a way of dealing with the conflicting factors. Attachment security/insecurity provides the basic personal background for both creating and resolving this conflicting situation, and each woman has to have recourse to cognitive-behavioural mechanisms to try to reduce dissonance. Attachment patterns are basically adaptive strategies developed to deal with conflicting attachment relationships. The definitive predictive value of attachment dimensions, particularly the insecure

avoidant adult pattern of attachment, will have to be tested in a prospective way. One would predict that most women who continue smoking will have this pattern of attachment. This is a new field of application of Attachment Theory and will be an interesting topic for future research.

12.5 Implications for future interventions and research

The studies described in this thesis support the idea that smoking behaviour in pregnancy is mainly a relationship issue. The results of these studies emphasise the role of attachment relationships in smoking behaviour in pregnancy, basically the relationship with the partner and the relationship with the baby-to-be, as well as the social environment. In addition, there is evidence from studies in pregnant women in which the dominant factor leading them to stop smoking is recognition of the risk to the baby's health. However, the response to such knowledge is mediated by cultural factors and individual patterns of information processing which may also be influenced by attachment patterns of relationships and by the current social and emotional context of the woman. Connor (1997) has commented on the particular difficulties of treating individuals with an avoidant attachment pattern, and considering that the main finding of this thesis is the strong association between smoking during pregnancy and avoidant attachment style, intervention strategies should consider this in order to obtain an appropriate reception and behavioural response. For instance, trying to avoid the direct mention of attachment issues in the wording of messages and professional advice to the pregnant smokers, which would tend to exacerbate defensive exclusion mechanisms and

preventing the induction of motivation to change and compliance with treatments. The outcome of all these confluent factors will determine the level of change of smoking behaviour in pregnancy. Thus, the findings of this research may have implications for several areas of activity regarding smoking in pregnancy.

12.5.1 Implications for mass media campaigns

Although information provided by mass media campaigns over the last ten years has not produced any significant effect on smoking prevalence (HEA, 1996; HEA, 1999) there is no doubt that information about the risk for the baby's health must be delivered extensively and in much more detail. Most women have the basic notion that smoking is not good for the baby but only a few have more detailed and specific information about the nature of the risks. A notion of health risk which is too general and ambiguous does not help in terms of providing specific topics of concern and motivation. If beliefs about health risks for the unborn baby are what are most motivating for women, the content of the messages should be much more specific regarding consequences of smoking during pregnancy, with emphasis on the baby's health and specific ways of dealing with difficulties in quitting. Information must contain meaningful concepts avoiding ambiguity and using an accessible language for lay people. Concepts which do not have a clear negative connotation for women, such as the association of smoking with low birthweight should be avoided and well-documented health risks for the baby, particularly in the medium and long-term should be emphasised. Information should contain a clear message stressing the positive aspects of abstaining from smoking to prevent consequences such as the five or six-fold increased risk of cot death, or the higher rates of

hyperactivity and learning difficulties in children at preschool age when mothers had smoked during pregnancy. This kind of strategy has been criticised by authors such as Lucas (1993) who sees this as forceful or "shocking" and probably leading to an increasingly vicious circle of guilt-anxiety-smoking and then more guilt and anxiety leading to increased smoking in these women. This concern does not apply to all pregnant smokers because we know that this kind of message will have an effect only on women who are receptive to it, probably those with a more secure or insecure preoccupied attachment pattern of relationships who are also developing a good maternal-fetal relationship in the context of a good quality marital relationship. In this context giving up smoking will be valued as a significant achievement and positively reinforced by the social environment. The effect of mass media campaigns of giving clear information about smoking consequences will be limited mostly to those who are receptive to such messages.

From this study it has been possible to discriminate clearly between two kinds of women who smoke, those who are able to stop smoking in pregnancy and those who are not characterised by an insecure attachment patterns avoidant type. Secure individuals may use the information to produce more radical changes in their smoking behaviour and eventually stop smoking altogether, despite the presence of nicotine dependence. Insecure individuals tend to solve the situation by a compromise that in the best of cases leads them to cut down cigarette consumption. We know that individuals who find it impossible to modify their smoking behaviour in pregnancy will make extensive use of defensive mechanisms to avoid the arousal caused by guilt or anxiety. The use of

messages addressed to the partner, emphasising their crucial role in helping expectant mothers to stop smoking, as well as encouraging them to stop smoking as a way of providing a smoke-free environment for the expectant mother, may be a good alternative design for a mass media campaign strategy. Incorporating the partner and close relationships to support the expectant mother to stop smoking by providing supportive and smoke-free environments seems to be something that may well help to improve the effects of mass media campaigns and it has been done in more recent campaign designs such as the NHS Smoking and pregnancy "partners" campaign (2004).

Knowledge of the importance of support provided by attachment relationships in modifying smoking behaviour should be incorporated into the messages delivered to women and the community. They must know that they may need help to modify their smoking behaviour and if they do not get the support they need from their close relationships, help should be provided by health and social services. Messages emphasising the difficulties that many women have in modifying their smoking habit without the necessary support, placing the responsibility on both parents rather than only on the woman, and offering concrete and specialised support for them in a sympathetic way, may be a better strategy than only giving information about the consequences of smoking. This would need the creation of specialised community programmes and counsellors (some strategies for interventions are described below).

In summary any information provided by mass media campaigns should deliver clear and meaningful messages to both women and their partners, reinforcing the importance of

giving up smoking for the sake of the mother's and baby's health as well as emphasising the need for support from the partner and other close relationships to help the expectant mother to stop smoking. Community programmes should be available in order to prevent, treat and maintain pregnant smokers in abstinence.

12.5.2 Preventive dimensions of mass media campaigns

The preventive dimension of mass media campaigns should be emphasised at different levels. Campaigns must target girls and adolescent women before they have acquired the habit or developed any kind of dependence on nicotine, in order to create awareness of the risk of smoking for reproductive life and to reduce smoking prevalence in this population in particular. This should be co-ordinated with governmental policies regarding tobacco advertising, educational programmes and health services for adolescents, particularly those who are at risk in terms of social deprivation.

The implementation of preventive campaigns for women to stop smoking before they become pregnant seems to be another alternative which could have effects in those women who are receptive to the messages. We should remember that there is a high rate of unplanned pregnancy in women who continue smoking during pregnancy (in the final study 66% of smokers had an unplanned pregnancy compared with 30% of quitters and 50% of non-smokers); nevertheless, this kind of campaign might increase awareness of risk to the baby. The general principle of incorporating the partner is also valid in this instance. This may help to improve the rate of planned pregnancy and subsequently a better disposition of both parents to improve conditions of the pregnancy.

12.5.3 Implications for health and social services.

Previous studies (Oakley, 1985; Lucas, 1993) have indicated the powerful influence of perceived functional social support in smoking behaviour during pregnancy. The research described here did not directly evaluate social support, but the findings regarding the quality of attachment relationship with the partner and other close relationships, particularly in the Adult Attachment Style Interview (Bifulco et al., 2002), together with some socio-demographic features such as low socio-economic status and poor housing conditions, are indicators which are consistent with those of previous studies. These are facts that cannot be ignored, and must be incorporated into any serious attempt to reduce the prevalence of smoking in pregnancy at the level suggested by the Health of the Nation (Department of Health, 1992 and 1998). The poor outcomes of recent national campaigns indicate that information-giving campaigns or professional advice at a local level will not be sufficient by themselves to reduce by one third the prevalence of smoking in pregnancy as was proposed in the Health of the Nation document. Specialised programmes including psycho-education and even couple counselling for a limited number of sessions could be one of the services targeting smokers' needs. Treatments for avoidant subjects should consider their particular difficulties in dealing with information and emotions regarding attachment, and maybe the use of alternative and pragmatically-oriented therapies such as hypnotherapy (Abbot et al., 1998) acupuncture (White and Rampes, 1998) nicotine replacement therapy (Benowitz, 1991) or bupropion (Chan et al., 2003). The availability of new pharmacological treatments such as nicotine replacement therapy or bupropion may have an impact on women who smoke before they become

pregnant, if they have access to them at a community level. Women may be led to consider quitting smoking using all the resources available at a time in which there would be no risk in using pharmacological and psychological resources combined to obtain better results. Currently, the use of nicotine patches during pregnancy has been approved in UK (West, et al., 2000) and it might be more advisable than continuing smoking because one could argue that, if the mother continues to smoke, the embryo would be receiving up to 4000 chemicals including nicotine, some of which are carcinogenic (Benowitz, 1991; NHS, 2004). There are also reports of the use of bupropion during pregnancy to help women to stop smoking with better results than only counselling or profesional advice (Chan et al., 2003, Einarson et al., 2003). The use of medication should be considered with the woman and her partner providing all the information about the potential benefits and risks of its use (Benowitz, 1991). Research in medication and non-conventional therapies may give new perspectives in the treatment of pregnant smokers considering the very low rates of smoking cessation using more conventional approaches such as counselling and self-help programmes reported in recent years (Wisborg et al., 1998; Moore et al., 2002, Gielen et al., 1997).

In the medium and long-term, measures to reduce availability of cigarettes in the market, such as increasing taxes, implementing severe restrictions on smoking in public and work places, banning advertising, and others, may well have an impact on reducing smoking prevalence in women. This is a matter of intense debate not only in the UK, but also in other western countries in which some of these severe restrictions have already been implemented. The outcome of any of these measures will be appreciated over the coming

years.

12.5.4 Implications for interventions.

12.5.4.1 General considerations:

The findings of this research illustrated the critical influence of the pattern of adult attachment relationships on the quality of maternal-fetal emotional bonding and on the attitude of expectant mothers regarding their smoking behaviour. Considering all the factors that influence smoking in pregnant women, there may be several ways to help change smoking behaviour. For the purpose of exposition, possible interventions are divided into different categories; this does not mean that they are mutually exclusive and they should be implemented in an integrated manner to be more effective. In all cases, a careful assessment of the social and relationship context of the woman and a detailed smoking and any other substance use history will be essential.

Having an assessment of the quality of the woman's adult attachment pattern would be particularly informative, particularly using the avoidant attachment instrument to determine what women are at risk of continuing smoking during pregnancy even before they get pregnant, however, the cost of evaluating the pattern of adult attachment in all women might not be justifiable. Rather, it would be more practical to use smoking as a proxy indicator of insecure attachment, although this would require replication of the study with a sample representative of the general UK population. Interventions should be

available at every level of health care, from primary care, involving health professionals such as GPs, midwifes and CPNs, to more specialised secondary or tertiary care when the complexity of the case requires it. Interventions could range from: simple but clear advice and information and the creation of self-help support groups, then if necessary, to more sophisticated interventions involving individual, family and couple counselling or therapy, the involvement of social services and other support agencies and the use of medication for women presenting more severe symptomatology. The use of nicotine replacement therapy in pregnant women is already available and bupropion is still under investigation, but these aids should be available for all women who smoke, particularly those planning to have a baby, and if they have nicotine dependence symptoms. Some women will be more susceptible to one kind of intervention and some women to another; a complete assessment before attempting any intervention will allow a better use of therapeutic resources. The interventions should be applied in a hierarchical way, going from the simpler to the more sophisticated ones, according to response in terms of smoking cessation controlled ideally by urine analysis. This will reinforce women's feelings of self-efficacy and will also allow evaluation of the efficacy of the interventions.

12.5.4.2 Interventions based on an Attachment Theory approach

Following the findings regarding the role of attachment patterns in smoking during pregnancy and using the general strategy of reducing the intensity of risk factors, one can divide the possible interventions according to the level of action on attachment relationships.

i) Interventions to improve the quality of social support provided by the attachment figure: in this category one can group all interventions that may help pregnant women to improve the quality of close relationships that provide social support. For instance, integrating the partner as an active collaborator may be one possibility. This could be graduated according to the particular needs and resources of the woman in a hierarchical way, first by individual assessment and counselling, then by inviting the partner for assessment and counselling, using a psycho-educational approach, and eventually upgrading to couple therapy when it is convenient. If the partner is not available it will be important to involve a family member or a close friend to improve the quality of social support that the woman is receiving from her social environment. If there is no close relationship available, integration into a support group should be considered as well as domiciliary visits by a health professional or members of the support group.

ii) Interventions to improve the quality of adult attachment pattern in the woman. Individual therapy focused on attachment issues may help women to gain awareness of their attachment patterns which are not usually conscious. By doing this, individual therapy may help to change some dysfunctional patterns of relating which are associated with insecurity of attachment. This kind of intervention requires a therapist with some level of training and the establishment of a relationship with the patient over an extended period of time, so it is an expensive resource and it may be difficult to implement except in particular cases. Nevertheless, it is an alternative that might be used when available. For a better outcome, social support provided in parallel by complementary interventions

as suggested above would be required.

iii) Interventions to improve the quality of Maternal-Fetal emotional bonding. There are times during the antenatal period which are particularly suitable for this kind of intervention. Reading et al. (1982) have reported that smoking advice given while routine scans are performed helped significantly to improve the cessation rate in women who smoke. Lucas (1993) reported that most women get a feeling of "reality" of their pregnancy when they visualise the fetus during the scan in the first trimester of pregnancy. This was significantly correlated with the perceived risk to the fetus and cessation attempts. Most ultrasound scanning is carried out by radiographers or, increasingly, by midwifes (Lucas, 1993). This could be one of the special times to implement interventions, but given the extremely busy atmosphere that characterises these services, this will involve a significant investment in improving facilities and resources, implying training for health professionals already working in this service and also employment of additional staff with appropriate skills. The findings regarding the nature of the maternal-fetal relationship support such an initiative as well as the relationship with the adult attachment figure. We should expect that the presence of the partner or an eventual alternative attachment figure in the scan procedure would probably improve the effectiveness of any intervention. The basic equation would be that for a woman to make significant changes on behalf of her baby's health she will require the support of an available attachment figure.

12.5.5 Implications for health professionals.

There are three main considerations derived from this study about the role of health professionals. First, that pregnancy is a particular period of time in which women are frequently in contact with health professionals. Second, that although in the final study 78% of smokers reported that they had smoking advice from health professionals, only one was offered a more specialised treatment to stop smoking. Furthermore, recent studies have shown that the rate of advice from health professionals has been decreasing progressively over the last few years (HEA, 1996; 1999). There may be two reasons for this: either that health professionals do not view smoking in pregnancy as a serious problem, or that they lack the resources to deal with the problem in terms of time and specific therapeutic skills. These considerations are highly consistent with the findings of a qualitative study of health professionals carried out by the HEA (1993), which found that:

- "There was a lack of a standardised system of pregnancy care, poor demarcation of responsibility across professionals and inconsistencies in practices within professionals which posed the major obstacles to a campaign on smoking in pregnancy.
- "Smoking status was recorded in an erratic manner and smoking behaviour throughout pregnancy was rarely monitored.
- "Professionals were pessimistic about changing smoking patients' behaviour.
- "There was little awareness on the part of professionals of the content of information leaflets or of specialist treatment for smokers.
- "Professionals had a number of concerns about training in this area. These include payment, time and accreditation."

The third consideration is derived from the particular approach of this research: considering the findings one may say that smoking during pregnancy is not only a condition that implies several perinatal health risks for the baby and the expectant mother but it is also an indicator of social and individual adversity, and therefore there is another important reason why it should be considered seriously by health professionals. From any of these perspectives it appears that a considerable effort should be made to regain the interest of health professionals in this topic, providing more accurate information not only about short-term risks for the mother and baby's health but also about risks in long-term morbidity for the infant. Emphasis should be given to the notion of smoking during pregnancy as an indicator of adversity and to the consideration of this factor when attempting interventions. The helping role of attachment figures providing support should be integrated in most interventions at a community level. Adequate therapeutic skills should be provided to professionals involved with pregnant women, particularly regarding the avoidant attachment style of many pregnant smokers and the creation of more specialised services for referrals of complex cases.

12.5.6 Implications for future research.

There are several areas of future research on smoking in pregnancy but given the orientation of this thesis the discussion focuses on the possibilities of further exploring the role of Attachment Theory.

i) To corroborate the findings it seems essential to test prospectively the predictive

potential of adult attachment dimensions, particularly the avoidant type, to determine smoking behaviour of women during pregnancy. The best realistic design should include a larger sample of cigarette smoking women just at the beginning of pregnancy and then followed up throughout their pregnancy and post-natally to observe if there are changes in their smoking behaviour according to their attachment pattern. One should expect women with an avoidant attachment pattern to continue smoking despite information being provided in the usual way.

ii) Research into interventions in which attachment dimensions are considered is another important field to explore as an extension of these findings. Some interventions at different levels involving attachment relationships have been suggested in a previous section above. From these different alternatives, research on cessation rates by integrating the partner into smoking advice sessions during ultrasound scan appears to be a promising one. The wording of the information provided to pregnant smokers and the use of non-conventional therapies in which attachment content is "bypassed" in order to obtain better motivation and compliance in avoidant individuals, is another research area that appears challenging.

iii) Another area of research that could be promising is to further explore smoking during pregnancy as an indicator of social and psychological adversity, particularly in terms of attachment relationships. From a theoretical point of view, if women who smoke during pregnancy will probably have an insecure adult attachment pattern and one should expect them to have more difficulties in establishing a good quality bonding relationship with

the baby after it is born. One should expect also that these babies would have difficulties in establishing secure attachment with their mothers. Considering that insecure attachment in infants has been reported to be associated with some adverse outcomes at preschool age in follow-up studies (Sroufe, 1983; Sroufe et al., 1990), smoking during pregnancy could be very useful as an indicator of a double risk for the baby: risks associated with exposure to nicotine, CO and other toxic components of tobacco smoke, and risks associated with having a mother with insecure attachment usually in adverse marital and social circumstances.

12.6 A brief final comment.

After this review and research on smoking in pregnancy, the main conclusion is that this research has contributed to a better understanding of this condition, basically by exploring the attachment dimensions of close relationships, thus providing a better understanding of the psychological and social circumstances of these women. The other conclusion is that the problem is much more complex that it was supposed to be when the Health of the Nation was published in 1992 and the target of a decrease of 33% in smoking during pregnancy for the year 2000 was set up. It seems that the complexity of the problem was clearly underestimated and to achieve changes in smoking behaviour of the proposed magnitude will require much more investment in research, training, more services and different sorts of inter-sectoral resources than was initially estimated.

References

Abbot, N.C., Stead L.F., White A.R., et al. (1998) Hypnotherapy for smoking cessation. The Cochrane Library Issue 2. Oxford: Update Software.

Adams, E.H., Groefer, J.C., Rouse, B.A. (1989) Epidemiology of substance abuse including alcohol and cigarette smoking. Conference of the Behavioural Teratology Society, the National Institute on Drug Abuse and the New York Academy of Sciences: Prenatal abuse of licit and illicit Drugs. Annals of the New York Academy of Sciences. (562) 14-20.

Adam, K.S., Sheldon-Keller, A.E., & West, M. (1996) Attachment organization and history of suicidal behaviour in clinical adolescents. Journal of Consulting and Clinical Psychology, 64, 264-272.

Ainsworth, M.D.S., Blehar, M.C., Waters, E. & Wall, S. (1978) Patterns of Attachment: A Psychological Study of the Strange Situation. Hillsdale, NJ: Lawrence Erlbaum.

Ainsworth, M.D.S. (1991) Attachment and other affectional bonds across the life cycle. In C.M. Parkes, J.Stevenson-Hinde and P. Marris (Eds). Attachment across the life cycle. 33-51. London: Tavistock-Routledge.

Alexander, L.L. (1987) The pregnant smoker: nursing implications. Journal of Obstetrics Gynecologic and Neonatal Nursing, 16, 167-173.

Allen, J.P., Hauser, S.T. & Borman-Spurrel, E. (1996) Attachment theory as a framework for understanding sequelae of severe adolescent psychopathology: An eleven-year follow-up study. Journal of Consulting and Clinical Psychology, 64, 254-263.

Alvarez, M.L., Muzzo, S. & Ivanovic, D. (1985) Escala para medicion del nivel socioeconomico en el area de la salud. Rev. Med . Chile. 113, 243-249.

American Psychiatric Association (1994) Diagnostic Criteria for DSM-IV. Washington

DC: American Psychiatric Association.

Anderson, H.R. & Cook, D.G. (1997) Passive smoking and sudden infant death syndrome: review of the epidemiological evidence. Thorax, 52, 1003-9.

Andrade C.S., Guimaraes F.S. (2003).Anxiolytic-like effect of group housing on stress-induced behavior in rats. Depress Anxiety, 18(3),149-52.

Armsden, G.C. & Greenberg, M.T. (1987) The Inventory of Parent and Peer Attachment: Individual differences and their relationship with psychological well-being in adolescence. Journal of Youth and Adolescence, 16, 427-454.

Arrindel, W., Boelens, W. & Lambert, H. (1983) On the psychometric properties of the Maudsley Marital Questionnaire (MMQ): evaluation of self-ratings in distressed and normal volunteer couples based on the Dutch version. Personality and Individual Differences, 4, 293-306.

Associated Press and NBC News (1998) Report on the Minnesota trial against tobacco industry. Electronic publication, Associated Press.

Bagley, C. (1992) Maternal smoking and deviant behaviour in 16-year-olds: a personality hypothesis. Personality and Individual Differences, 13, 377-378.

Ball S.A., Rounsaville B.J., Tennen H., Kranzler H.R. (2001). Reliability of personality disorder symptoms and personality traits in substance-dependent inpatients. J Abnorm Psychol, 110(2), 341-52.

Barnett, B., Hanna, B. & Parker, G. (1983). Life event scales for obstetrics groups. Journal of Psychosomatic Research, 27, 313-320.

Bartholomew, K. (1990) Avoidance of intimacy: an Attachment perspective. Journal of Social and Personal Relationships, 7, 147-178.

Bartholomew, K., & Horowitz, L.M. (1991) Attachment styles among young adults. A test of a four-category model. Journal of Personality and Social Psychology, 61, 226-244.

Batten, L. (1985). Addiction and perceived dependence as smoking motivations: an empirical analysis. Unpublished manuscript. University of Southampton.

Bechara, A., Dolan, S., Denburg, N., Hindes, A., Anderson, S.W. and Nathan, P.E., (2001). Decision-making deficits, linked to a dysfunctional ventromedial prefrontal cortex, revealed in alcohol and stimulant abusers. Neuropsychologia 39, pp. 376–389.

Bell, M., Billington, R. & Becker, B. (1986) A scale of the assessment of object relations: Reliability, validity, and factorial invariance. Journal of Clinical Psychology, 42, 733-741.

Belsky, J., Campbell, S., Cohn, J. & Moore, J. (1996) Instability of attachment security. Developmental Psychology, 32, 921-924.

Belsky, J., Fish, M. & Isabella, R. (1991) Continuity and discontinuity in infant negative and positive emotionality: family antecedents and attachment consequences. Developmental Psychology, 27, 421-431.

Benoit, D. & Parker, K. (1994) Stability and transmission of attachment across three generations. Child Development, 65, 1444-1456.

Benowitz, N. (1991) Nicotine replacement therapy during pregnancy. British Medical Journal, 22, 3174-3177.

Berman W.H. & Sperling M.B. (1995) The Structure and Function of Adult attachment. In M.B. Sperling and W.H. Berman (Eds.) Attachment in Adults, Clinical and Developmental Perspectives (pp. 3-27). Guilford Press: New York.

Berridge, K.C. and Robinson, T.E., (2003). Parsing reward. Trends in Neurosciences 26, pp. 507–513.

Bifulco, A.T., Brown, G.B. & Harris, T.O. (1987) Childhood loss of parent, lack of adequate parental care and adult depression: a replication. Journal of Affective Disorders, 12, 115-128.

Bifulco, A., Moran, P., Bull, C., et al. (2002) Adult attachment style: I. Its relationship to clinical depression. Social Psychiatry and Psychiatric Epidemiology, 37, 50-59.

Bifulco. A., Figueiredo, B., Guedeney, N., et al. (2004). Maternal attachment style and depression associated with childbirth: preliminary results from a European and US cross-cultural study. British Journal of Psychiatry, 184 (suppl. 46), s31-s37.

Birtchnell, J. (1993) Does recollection of exposure to poor maternal care in childhood affect later ability to relate? British Journal of Psychiatry, 162, 335-344.

Blackburn, C. & Graham, H. (1993) Smoking among Working Class Mothers. University of Warwick.

Blum, K., Braverman, E.R., Holder, J.M., Lubar, J.F., Monastra, V.J., Miller, D., Lubar, J.O., Chen, T.J.H. and Comings, D.E., (2000). Reward deficiency syndrome: A biogenetic model for the diagnosis and treatment of impulsive, addictive and compulsive behaviours. Journal of Psychoactive Drugs 32, p. U3-+.

Blume, S.L. & Russell, M. (1993) Alcohol and substance abuse in the practice of obstetrics and gynecology. In Stewart and Stotiand (eds) Psychological Aspects of Women's Health Care: The Interface between Psychiatry and Obstetrics and

Gynaecology. Washington DC; American Psychiatric Press Inc. pp.391-409.

Bneit, K.S. & Seller, M.J. (1995) Ultrastructural changes in 9-day old mouse embryos following maternal tobacco smoke inhalation. Exp. Toxicol. Pathol. 47, 453-61.

Boccia, M.L., Reite, M.L. & Laudenslager M. (1991) Early social environment may alter the development of attachment and social support: two case reports. Infant Behaviour and Development, 14, 252-260.

Bowlby, J. (1973) Attachment and Loss: Vol 2. Separation: Anxiety and Anger. New York: Basic Books.

Bowlby, J. (1982) Attachment and Loss: Vol 1. Attachment. New York: Basic Books. (original work published 1969).

Bowlby, J. (1980) Attachment and Loss: Vol 3. Loss: Sadness and Depression. New York: Basic Books.

Bowlby, J. (1987) Attachment. In R.Gregory (Ed) The Oxford Companion to the Mind. Oxford: Oxford University Press.

Bowlby, J. (1988) Developmental psychiatry comes of age. American Journal of Psychiatry, 145, 1-10.

Brandon, T.H. and Baker, T.B. (1991. The Smoking Consequences Questionnaire: the subjective expected utility of smoking in college students. Psychological Assessment, 3, 484-491.

Brennan, K.A., Clark, C.L. & Shaver, P.R. (1998) Self-report measurement of adult romantic attachment: An integrative overview. In J.A. Simpson & W.S.Rodhes (Eds.), Attachment Theory and Close Relationships, pp. 46-76. New York: Guilford Press.

Brennan, K. & Shaver, P. (1995) Dimensions of adult attachment, affect regulation, and romantic relationship functioning. Personality and Social Psychology Bulletin, 21, 267-283.

Bretherton, I. (1985) Attachment theory: Retrospect and prospect. In I. Bretherton. & E.. Waters (Eds). Growing points of attachment theory and research. Monographs of the Society for Research in Child Development. 50 (1-2, Serial No.209), 3-35.

Butler, N.R., Goldstein, H. & Ross, E.M. (1972) Cigarette smoking in pregnancy: its influence on birth weight and perinatal mortality. British. Medical Journal, 2, 127-130.

Butler, N.R. & Goldstein, H. (1973) Smoking in pregnancy and subsequent child development. British Medical Journal, 4, 573.

Cabello, C., Hrepic, N., Astudillo, L., et al. (1991) Cigarette smoking and its relation to pregnancy and lactation in Arica (Chile). Rev Chil. Pediatr., 62, 386-389.

Camilli, A.E., McElroy, L.F. & Reed, K.L. (1994) Smoking and pregnancy: a comparison of Mexican-American and non-hispanic white women. Obstetrics and Gynecolology, 84, 1033-7.

Casper, L.M. and Hogan D.P. (1990) Family networks in prenatal health. Social Biology, 37, 84-101.

Capitanio, J., Rasmussen, K. L. R., Snyder, D., et al (1986) Long term follow up of previously separated pigtail macaques: group and individual differences in response to novel situations. Journal of Child Psychiatry and Psychology, 27, 531-538.

Carratu, M.R., Cagiano, R., De Salvia, M.A., et al (1995) Developmental neurotoxicity of carbon monoxide. Arch. Toxicol. Suppl., 17, 295-301.

Ches, S. & Thomas, R. (1982) Infant bonding: Mystique and reality, American Journal of Orthopsychiatry, 52, 213-222.

Chan, B., Eniarson, A., Selby, P., et al (2003) Pregnancy outcome and maternal changes in smoking habits with gestational exposure to Bupropion. Birth Defects Res Part A Clin Mod Teratol., 67, 391.

Chessare J.B., Pascoe J. M. & Baugh E.F. (1986). Smoking during pregnancy and child maltreatment: is there an association? International Journal Biosocial Research, 8, 37-42.

Christen, A.G. & Glover, E.D. (1983) Psychological satisfactions derived from smoking cigarettes in fifty-seven dental patients. Journal of Drug Education, 139, 95-102.

Cifuentes, L., Ortiz, L., Herrera, E. & Belitzky, R. (1983) Consumo de alcohol, tabaco y cafeinas en el embarazo: resultados perinatales de una muestra poblacional; en el H.U.V. Cali, Colombia. Presented in: Congreso Colombiano de Ginecologia y Obstetricia. Bucaramanga, Colombia.

Clare, A.W. & Cairns, V.F. (1978) Design, development and use of standardised interview to assess social maladjustment and dysfucntion in community studies. Psychological Medicine, 8, 599-604.

Clark, J.M. & Maclaine, K. (1992) The effects of smoking in pregnancy: a review of approaches to behavioural change. Midwifery, 8, 19-30.

Cnattingius, S. & Thorslund, M. (1990) Smoking Behavior among pregnant women prior to antenatal care. Social Science and Medicine, 31,1271-1275.

Cnattingius, S., Lindmark, G. & Meirik, O. (1992) Who continues to smoke while

pregnant? Journal of Epidemiology and Community Health, 46, 218-21.

Coambs, R. B., Kozlowsky, L. T. & Ferrence, R. G. (1989) The Future of Tobacco Use and Smoking Research. In Ney, T. and Gale, A. (Eds.) Smoking and Human Behaviour. New York: John Wiley.

Cohen, S. & Linchtestein, E. (1990) Partner behaviours that support quitting smoking. Journal of Consulting and Clinical Psychology, 58, 304-309.

Cogill, S.R., Caplan, H.L., Heather, A., et al. (1986) Impact of Maternal Postnatal depression on cognitive development in young children. British Medical Journal, 292, 1165-7.

Collins, N.L. & Read, S. J. (1990) Adult attachment, working models, and relationship quality in dating couples. Journal of Personality and Social Psychology, 58, 644-663.

Conde, C., Ortiz, A.R. & Folch, N. (1989) Tabaquismo y embarazo. Rev. Cuba. Hig Epidemiol. 27, 151-8.

Condon, J.T. (1993) The assesment of ante-natal emotional attachment: Development of a questionnaire instrument. British Journal of Medical Psychology, 66, 167-183.

Condon, J.T. (1987) Predisposition to psychological complications after stillbirth. Obstetrics and Gynecology, 70, 495-497.

Connors, M.E. (1997) The Renunciation of Love. Psychoanal. Psychol., 14, 475-493.

Copotelli, H. C. & Orleans, C. T. (1985) Partner support and other determinants of smoking cessation and maintenance. Journal of Consulting and Clinical Psychology, 53, 455-460.

Counsilman, J.J. & Mackay, E.V. (1985) Cigarette smoking by pregnant women with particular reference to their past and subsequent breast feeding behaviour. Aust. New Zealand J Obstet Gynaecol. 25, 101-107.

Cox, J.L., Holden, J. M. & Sagovsky, R. (1987) Detection of postnatal depression: Development of the 10-item Edimburgh Postnatal Depression Scale. British Journal of Psychiatry, 150, 782-786.

Cranley, M.S. (1981) Development of a tool for the measurement of maternal attachment during pregnancy. Nursing Research, 30, 281-284.

Crowell, J.A. & Treboux, D. (1995) A review of adult attachment measures: implications for theory and research. Social Development, 4, 294-327.

Cuomo, V. (1993) Neurobehavioural changes produced in rats by prenatal exposure to carbon monoxide. Brain Research, 616, 126-31.

Dallal, Gerard E. (1988) Design: A Supplementary Module for SYSTAT and SYGRAPH Evaston, K : SYSTAT, Inc.

Denson, R., Nanson, J.L.& McWaters, M.A. (1975) Hyperkinesis and maternal smoking. Canadian Psychiatric Association Journal, 20, 183-7.

Dean, C., Surtees, P.G. & Sashidharan, S.P. (1983) Comparison of Research Diagnostic Systems in the Edinburgh Postnatal Depression Scale. British Journal of Psychiatry, 150, 782-786.

deOnis, M. & Villar, J.(1991) Tobacco use in Spanish women. World Health Statistics Quarterly, 44, 80-8.

Department of Health (1992) The Health of the Nation: A Strategy for Health in England. Cm 1986. London: HSMO.

Di Ciano, P., Blaha, C.D. and Phillips, A.G., (1995). Conditioned increases in motor activity and dopamine concentrations in the nucleus accumbens of the rat following repeated administration of cocaine or *d*-amphetamine. Abstracts-Society For Neuroscience 21, p. 2103.

Di Giovanni, V., Cagiano, R., De Salvia, M. A., et al (1985) Smoking attitudes and habits during pregnancy. Health Education Journal, 44, 83-86.

Dozier, M. & Kobak R.R. (1992) Psychobiology in attachment interviews: Converging evidence for deactivating strategies. Child Development, 63, 1473-1480.

Dozier, M. (1990) Attachment organization and treatment use for adults with serious psychopathological disorders. Development and Psychopathology, 2, 47-60.

Egeland, B. & Farber, E.A.(1984) Infant-mother attachment: Factors related to its development and changes over time. Child Development, 55, 753-771.

Ekselius L, Lindstrom E, von Knorring L, Bodlund O, Kullgren G. (1994). SCID II interviews and the SCID Screen questionnaire as diagnostic tools for personality disorders in DSM-III-R. Acta Psychiatr Scand, 90(2),120-3.

Elicker, J., Egelund, M. & Sroufe, L.A. (1992) Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. Parke & G. Ladd (Eds) Family-Peer Relations: Models of Linkage (pp.77-106). Hillsdale, NJ: Erlbaum.

Ellard, G. A., Johnstone, F. D., Prescott, R. J., et al (1996) Smoking during pregnancy: the dose dependence of birth weight deficits. British. Journal of Obstetetrics and

Gynaecolology, 103, 806-13.

Eniarson, A., Chan, B., Selby, P., et al (2003) Pregnancy outcome and maternal changes in smoking habit's with gestational exposure to Bupropion. Pharmacoepidemiol Drug Safety, 12 (suppl), s187.

Erickson, M., Sroufe, L., & Egeland, B. (1985) The relationship between quality of ataachment and behaviour problems in preschool in a High-risk sample. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 147-166.

Everitt B.S. (1989) Statistical Methods for Medical Investigation. New York: Oxford University Press.

Eysenck, H.J. (1965) Smoking, Health, and Personality. London: Weidenfeld and Nicolson.

Eysenck, H. & Eysenck, S.G.B. (1975) Manual of the Eysenck Personality Questionnaire. London: Hodder & Stoughton.

Fairbain, R. (1952) Psychoanalytic studies of the personality. London: Tavistock.

Farga V. (1983) Control del tabaquismo en Chile. 16 Congreso Chileno de Enfermedades Respiratorias. Santiago de Chile. p.44.

Farmer, A.E. & McGuffin, P. (2003) Humiliation, loss and other types of life events and difficulties: a comparison of depressed subjects, healthy controls and their siblings. Psychol Med. 33, 1169-75.

Feeney, J.A., Noller, P. & Hanrahan, M. (1994) Assessing Adult Attachment. In M.B. Sperling & W.H. Berman (Eds.) Attachment in Adults, Clinical and Developmental Perspectives. New York: Guilford Press.

Festinger, L. (1957) A Theory of Cognitive Dissonance. London: Tavistock Press.

Fisher, J.M. (1976) Sex differences in smoking dynamics. Journal of Health and Social Behaviour.17, 155-162.

Fletcher, J. & Evans, M. (1983) Maternal bonding in early fetal ultrasound examination. New England Journal of Medicine, 308, 392-393.

Florenzano, R., Feuerhake, O., Hinrichsen, M. & Figueroa, C. (1984) La calibracion de una escala cuantitativa para medir el nivel de depresion en poblaciones. Rev. Chil. NeuroPsiquiat. 22, 17-23.

Fonagy, P., Steele, H. & Steele, M. (1991) Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. Child Development, 62, 891-905.

Fonagy, P., Steele, M., Steele, H., et al. (1995) Attachment, the reflective self, and borderline states: The predictive specificity of the Adult Attachment Interview and pathological emotional development. In S. Goldberg, R. Muir & J. Kerr (Eds), Attachment Theory: Social Developmental and Clinical Perspectives (pp.233-279) Hillsdale, NJ: Analytic Press.

Fox, N.L., Sexton, M., Hebei, J.R. & Thompson, B. (1989) The reliability of self-reports of smoking and alcohol consumption by pregnant women. Addictive Behaviour, 14, 187-195.

Fraley, R.C. & Waller, N.G. (1998) Adult attachment patterns: A test of the typological model: In J.A. Simpson & W.S. Rholes (Eds.), Attachment theory and close relationships. 77-114. New York: Guilford Press.

Fraley, R.C., Waller, N.G. & Brennan, K.A. (2000) An item-response theory analysis of self report measures of adult attachment. Journal of Personality and Social Psychology, 78, 350-365.

Francis, L. J. & Mullen, K. (1993) Religiosity and attitudes towards drug use among 13-15 year olds in England. Addiction, 88, 665-72.

Frith, C.D. (1971) Smoking behaviour and its relation to the smoker's inmediate experience" British Journal of Medical Psychology, 61, 17-36.

Frodi, A., Grolnick, W., & Bridges, L. (1985) Maternal Correlates of stability and change in infant-mother attachment. Infant Mental Health Journal, 6, 60-67.

Fuxe K., Anderson K., Cneroth P., et al (1989) Neuroendocrine actions of nicotine and of exposure to cigarette smoke: medical implications. Psychoneuroendocrinology, 14, 19-41.

Gielen A.C., Windsor, R., Faden R.R., et al. (1997) Evaluation of a smoking cessation intervention for pregnant women in an urban prenatal clinic. Health Education Research, 12, 247-54.

George, C., Kaplan, N., & Main, M. (1985) The Adult Attachment Interview. Unpublished manuscript, University of California, Berkeley.

Gillies, P.A., Madeley, R.J. and Power, F.L. (1989) Why do pregnant women smoke? Public Health, 103, 337-343.

Gilbert, D.G., Meliska, C.J. Wesler, R. & Estes, S.L. (1994) Depression, personality, and gender influence EEG, cortisol, beta-endorphin, heart rate, and subjective responses to smoking multiple cigarettes. Personality and Individual Differences, 16, 247-264.

Glasser, B. & Strauss, A. (1967) The discovery of grounded theory: Strategies for qualitative research. Chicago: Aldine.

Glassman, A.H. & Koob, G.F. (1996) Psychoactive smoke. Nature, 379, 677-78.

Goldberg, D. (1972) The Detection of Psychiatric Illness by Questionnaire. London: Oxford University Press.

Goldberg, W.A. and Easterbrooks, M.A. (1984) Role of Marital Quality in Toddler Development. Developmental Psychology, 20, 504-514.

Goldsmith, H.H., & Alansky, J.A. (1987) Maternal and infant temperamental predictors of attachment: A meta-analitic review. Journal of Consulting and Clinical Psychology, 55, 805-816.

Goldstein, H. (1971) Factors influencing the height of seven year old children: results from the National Child Development Study. Human Biology, 43, 92-111.

Graham, H. (1987) Women's smoking and family health. Social Science and Medicine, 25, 47-56.

Graham, H. (1976) Smoking in pregnancy: the attitudes of expectant mothers. Social Science and Medicine, 10, 379- 405.

Grossman, K.E. & Grossman, K. (1991) Attachment quality as an organizer of emotional and behavioural responses in a longitudinal perspective. In C.M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.) Attachment across the life cycle (pp.93-114). London: Tavistock/ Routledge.

Halal, I.S., Victoria, C.G., Barros, F.C. (1993) Determinantes do habito de fumar e de seu abandono durante a gestacao em localidade urbana na regiao sul do Brasil. Rev Saude Publica, 27, 105-12.

Halpern, M.T. (1994) Effect of smoking characteristics on cognitive dissonance in current and former smokers. Addictive Behaviours, 19, 209-217.

Hamilton, C.E. (1994) Continuity and discontinuity of attachment from infancy through adolescence. Unpublished doctoral dissertation, University of California at Los Angeles.

Harlow, H. (1958) The nature of love. American Psychologist, 13, 673-685.

Haug, K., Aaro, L. E. & Fugelli, P. (1993) Smoking habits in early pregnancy related to age of smoking debut. Family Practice and International Journal, 10, 66-9.

Hazan, C. & Shaver P.R. (1987) Romantic love conceptualized as an attachment process. Journal of Personality and Social Psychology, 52, 511-524.

Hazan, C. & Shaver P.R. (1994) Attachment as an organizational framework for research in close relations. Psychological Inquiry, 5, 1-22.

Health Education Authority (1991) The Smoking Epidemic: a Manifesto for Action. London: HEA.

Health Education Authority (1991) The Smoking Epidemic: Counting the Cost in England. London: HEA.

Health Education Authority (1996a) The Pregnancy and Smoking Campaign, Quantitative Tracking Survey from March 1992 to March 1996. London: HEA.

Health Education Authority. (1996b) Smoking and Pregnancy: Developing a communications strategy for cessation. London: NSEC HEA.

Health Education Authority. (1999) Smoking and Pregnancy. A Survey of Knowledge Attitudes and Behaviour 1992-1999. London: HEA..

Health Education Authority. (1994a) The pregnancy and Smoking Campaign March 1991 to March 1994, An Update. London: HEA.

Health Education Authority. (1994b) Smoking and Pregnancy: Guidance for Purchasers and Providers. London: HEA.

Health Education Authority. (1993) Smoking and Pregnancy: Survey to General Practitioners. London: HEA.

Heard, D. & Lake, B. (1986). The attachment dynamic in Adult life' British Journal of Psychiatry, 149, 430-438.

Heath; A.C., Madden, P.A.F., Slutske, W.S. & Martin, N.G. (1995) Personality and inheritance of smoking behaviour: A genetic perspective. Special Issue: Genetic, environmental, and situational factors mediating the effects of nicotine. Behaviour Genetics, 25, 103-117.

Heidrich, S.M., & Cranley, M.S. (1989) Effect of fetal movement, ultrasound sacna, and amniocentesis on maternal-fetal attchment. Nursing Research, 38, 81-84.

Heinike, C.M. (1995) Expanding the study of the formation of the child's relationships. In: Caregiving, cultural, and cognitive perspectives on secure-base behaviour and

working models: new growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 244, 300-309.

Heinike, C.M. & Guthrie, D. (1992) Stability and change in husband-wife adaptation, and the development of the positive parent-child relationship. Infant Behaviour and Development, 15, 109-127.

Henderson, A. Scott, Byrne, D.G. & Duncan-Jones, P. (1981) Neurosis and the Social Environment. New York: Academic Press.

Heron, J., O'Connor T. C., Evans J., et al. (2004) The course of anxiety and depression through pregnancy and the postpartum in a community sample. Journal of Affective Disorders, 80, 65-73.

Herrera, J., Céspedes, M., Romero, M., et al. (1987) El habito de fumar en un grupo de embarazadas de tres comunidades rurales. Cuadernos Medico Sociales, 3, 122-126.

Hill, D.J., White, V.M. & Gray, N.J. (1991) Australian patterns of tobacco smoking in 1989. Medical Journal of Australia, 154, 797-801.

Hilton, C.A. & Condon, J.T. (1989) Changes in smoking and drinking during pregnancy. Australian and New Zealand Journal of Obstetrics and Gynecology, 29, 18-21.

Hinde, R.A. (1982) Attachment: some conceptual and biological issues. In C.M. Parkes & J. Stevenson-Hinde (Eds.), The Place of Attachment in Human Behaviour (pp. 31-53). New York: Basic Books.

Hindy, C., G., Schwartz, J.C. & Brodsky, A. (1989) If this is love, why do I feel so insecure? New York: Atlantic Monthly Press.

HMSO. (1992). General Household Survey 1990. London: HMSO.

Hofer, M.A. (1984) Relationships as regulators: A psychobiologic perspective on bereavement. Psychosomatic Medicine, 46, 183-197.

Holmes, J. (1993) Attachment theory: A biological basis for psychotherapy? British. Journal of Psychiatry. 163, 430-438.

Holmes, J. & Lindley, R. (1989) The Values of Psychotherapy. Oxford: Oxford University Press.

Howe, G. et al. (1985). Effects of cigarette smoking and other factors on fertility: findings in a large prospective study. British Medical Journal, 8 June. 1697-1700.

Holsclaw, D.S. & Topham A.L. (1978) The effects of smoking on fetal, neonatal and childhood development. Perinatal medicine: antenatal aspects. Pediatric Annals, 7, 105-134.

Horowitz, L., Rosemberg, S., & Bartholomew, K. (1993) Interpersonal problems, attachment styles, and outcome in brief dynamic psychotherapy. Journal of Consulting and Clinical Psychology, 61, 549-560.

Hughes, J.R., Hatsukami, D.K. and Skoog, K.P. (1986) Physical dependence on nicotine gum: a placebo substitution trial. Journal of the American Medical Association, 255, 3277-3279.

Hughes, J.R., Gust, S.W. & Pechacek, T.F. (1987) Prevalence of tobacco dependence and withdrawal, American Journal of Psychiatry, 144, 205-208.

Hyler SE, Skodol AE, Kellman HD, et al(1990).Validity of the Personality Diagnostic Questionnaire-Revised: comparison with two structured interviews. American Journal of Psychiatry 147:1043–1048,

Hyler, S.E., Skodol, A.E., Oldham, J.M., et al (1992) Validity of the Personality Diagnostic Questionnaire-Revised: a replication in an outpatient sample. Comprehensive Psychiatry, 33, 73-7.

Ikard, F.F., Green, D.E. and Horn, D. (1969) A Scale to differentiate between types of smoking as related to the management of affect. International Journal of the Addictions, 4, 649-659.

Inagaki H, Kuwahara M, Tsubone H. (2005). Changes in autonomic control of heart associated with classical appetitive conditioning in rats. Exp Anim, 54(1):61-9.

Infant Feeding Survey (1995) Office for National Statistics. London: The Stationery Office.

Infant Feeding Survey (2000) Office for National Statistics. London: The Stationery Office.

Instituto Nacional de Estadisticas (INE) (1989) Informe de estadisticas generales de la Republica de Chile. Oficina Nacional de Estadistica, Gobierno de Chile.

Jacobsberg L, Perry S, Frances A. (1995). Diagnostic agreement between the SCID-II screening questionnaire and the Personality Disorder Examination. J Pers Assess, 65(3), 428-33.

Jacobson, B. (1986) Beating the Ladykillers: Women and Smoking. Pluto Press.

Jadresic, E., Jara, C., Miranda, M., et al (1992) Emotional disorders in pregnancy and the puerperium: a prospective study of 108 women. Rev. Chil. Neuro-Psiquiat., 30, 99-106.

Jensen, T.K, Shaumburg, I. & Boldsen, J. (1992) Cigarette smoking and time before pregnancy among Danish pharmacy assistants. Ugeskr laeger, 154, 1360-3.

Jentsch, J.D. and Taylor, J.R., (1999). Impulsivity resulting from frontostriatal dysfunction in drug abuse: Implications for the control of behaviour by reward-related stimuli. Psychopharmacology 146, pp. 373–390.

Kagan, J., Reznick, J.S., & Gibbons, J. (1989) Inhibited and uninhibited types of children. Child Development, 60, 838-845.

Kagan, J., Reznick, J.S., Clarke, C., et al (1984) Behavioural Inhibition to the unfamiliar. Child Development, 55, 2212-2225.

Kandel, D.B. & Davies, M. (1986) Adult sequelae of adolescent depressive symptoms. Archives of General Psychiatry, 43, 255-262.

Kaufman, J.N., Ross, T.J., Stein, E.A. and Garavan, H., (2003). Cingulate hypoactivity in cocaine users during a GO–NOGO task as revealed by event-related functional magnetic resonance imaging. Journal of Neuroscience, 23, pp. 7839–7843.

Kelsey, J.L., Dwyer, T., Holford, T.R. & Bracken, M.B. (1973) Maternal smoking and congenital malformations: an epidemiological study. Journal of Epidemiology and Community Health, 32, 102-107.

Kendler, K.S., Gardner, C.O., Prescott, C.A. (1997) Religion, psychopathology, and substance use and abuse; a multimeasure, genetic-epidemiologic study. American Journal of Psychiatry, 154, 322-9.

Kilpatrick, L.A., and Shaver, P.R. (1990) Attachment theory and religion: Childhood attachmens, religious beliefs, and conversion. Journal for the Scientific Study of Religion, 29, 315-334.

Kilpatrick, L.A., and Shaver, P.R. (1992) An attachment-theoretical approach to romantic love and religious belief. Personality and Social Psychology Bulletin, 18, 266-275.

Kline, et al. (1977) Smoking; a risk factor for spontaneus abortion. New England Journal of Medicine, 297, 793-796.

Knoll, M., Shaoulian, R., Magers, T. & Talbot, P. (1995) Ciliary beats frequency of hamster oviducts is decreased in vitro by exposure to solutions of mainstream and sidestream cigarette smoke. Biol. Reprod., 53, 29-37.

Kobak, R. & Hazan, C. (1991) Attachment in marriage: effects of security and accuracy of working models. Journal of Personality and Social Psychology, 60, 861-869.

Kobak R.R. & Sceery, A. (1988) Attachment in late adolescence: working models, affect regulation and representation of self and others. Child Development, 59, 135-146.

Kumar, R., McIvor, R.J. & Davis, A. (1996). Mental illness in childbearing women. In: Essentials of Postgraduate Psychiatry, Third Edition. R. Murray, P. Hill and P. McGuffin (Eds.). Cambridge University Press.

Kumar, R. & Robson, K.M. (1984) A prospective study of emotional disorders in childbearing women. British Journal of Psychiatry, 144, 35-47.

Kumar, R., Robson, K.M. & Smith A.M.R. (1984) Development of a self-administered questionnaire to measure maternal adjustment and maternal attitudes during pregnancy and after delivery. Journal of Psychosomatic Research, 28, 43-51.

Lamb, M.E., Thompson, R.A., Gardner, W. & Charnov, E.L. (1985) Infant-Mother Attachment. The origins and developmental significance of individual differences in strange situation behaviour. New Jersey: Lawrence Erlbaum Associates.

Lambers, D.S. and Clark, K.E. (1996) The maternal and fetal physiologic effects of nicotine. Seminars in Perinatology, 20, 115-26.

Land, G.H. & Stokbauer, J.W. (1993) Smoking and pregnancy outcome: trends among black teenage mothers in Missouri. American Journal of Public Health, 83, 1121-4.

Laudenslager, M.L. (1988) The psychobiology of loss: lessons from human and non-human primates. Journal of Social Issues, 44, 19-36.

Laudenslager, M.L., Capitanio, J.P., & Reite, M.L. (1985) Some possible consequences of early separation experiences on subsequent inmune function. American Journal of Psychiatry, 142, 862-864.

Lee, C. (1989). Perceptions of Immunity to Disease in Adults Smokers. Journal of Behavioural Medicine, 12, 267-277.

Lejuez, C.W., Read, J.P., Kahler, C.W., Richards, J.B., Ramsey, S.E., Stuart, G.L., Strong, G.R. and Brown, R.A., (2002). Evaluation of a behavioural measure of risk taking: The Balloon Analogue Risk Task (BART). Journal of Experimental Psychology. Applied, 8, pp. 75–84.

Levine, L.U., Tober, S.B., Slade, H., & Ward, M.J. (1991) Mother's mental representations and their relationship to mother-infant attachment. Bulletin of the Menninger Clinic, 55, 454-469.

Lewis, K.W., Bosque, E.M. (1995) Deficient hypoxia awakening response in infants of smoking mothers: possible relationship to sudden infant death syndrome. Journal of. Pediatrics, 127, 691-9.

Lewis, M., Feiring, C., McGuffog, C. & Jaskir, J. (1984) Predicting psychopathology in six-years old from early social relations. Child Development, 55, 123-136.

Lipkus, I.M., Barefoot, J.C., Williams, R.B. & Siegler, I.C. (1994) Personality measures as predictors of smoking initiation and cessation in the UNC Alumni Heart Study. Health Psychology, 13, 149-155.

Lippi, U.G., Segre, C., Andrade, A.S., et al (1986) Fumo y gravidez: Influencia sobre idade gestacional ao parto e peso ao nacer. Rev Paul Pediatr., 4, 10-5.

Little, R.E., Harrison, L., Grathwohl, H.L., et al (1981) Public awareness and knowledge about the risk of drinking during pregnancy en Multmomah County, Oregon. American Journal of Public Health, 71, 312-314.

Livson, N. & Leino, E.V. (1985) Adolescent personality antecedents of adult cigarette smoking: a longitudinal study. Journal of Genetic Psychology, 146, 343- 355.

Livson, N. & Leino, E. V. (1988) Cigarette smoking motives: factorial structure and gender differences in a longitudinal studies. International Journal of the Addictions, 23, 535-544.

Lorentz, C. (1952). King Solomon's Ring. London: Methuen.

Lucas, K. (1993) The relationship between beliefs, attitudes, negative affect and changes in smoking behaviour during pregnancy. Thesis for the submission for the degree of Doctor of Philosophy. University of Sussex.

Lundberg, O., Rosen, B. &Rosen, M. (1991) Who stopped smoking?- results from a panel survey of living conditions in Sweden. Social Science and Medicine, 32, 298-308.

Lyddon, W.J., Bradford, E. & Nelson, J.P. (1993) Assessing Adolescent and Adult Attachment: a review of current self-report measures. Journal of Counselling & Development, 71, 390-395.

Lynch, D., Tamburrino, M. & Nagel, R. (1996) Depressive symptoms: associations with health perceptions and health behaviours. Depression, 4, 68-72.

Lyons-Ruth, K. (1996) Attachment relationships among children with aggressive behaviour problems: The role of disorganised early attachment patterns. Journal of Consulting and Clinical Psychology, 64, 64-73.

Macleod Clark, J. & Maclaine, K. (1992) The effects of smoking in pregnancy: a review

of approaches to behavioral change. Midwifery, 8, 19-30.

Madeley, R.J., Gillies, P.A., Power, F.L. & Symonds, E.M. (1989) Nottingham mothers stop smoking project: baseline survey of smoking in pregnancy. Community Medicine, 11, 124-30.

Main, M. & Cassidy, J. (1988) Categories of response to reunion with the parent at age 6: predictable from infant attachment classifications and stable over a 1-month period. Developmental Psychology, 24, 415-426.

Main, M., Kaplan, N. & Cassidy, J. (1985) Security in infancy childhood and adulthood: a move to the level of representation. In I. Bretherton & E. Waters (Eds.) Growing points in attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 66-104.

Main, M. & Weston, D. (1981). Quality of attachment to mother and to father: Related to conflict behaviour under readiness for establishing new realtionships. Child Development, 52, 932-940.

Mangelsdorf, S., Shapiro, J. & Marzolf, D. (1995) Developmental and temperamental differences in emotion regulation in infancy. Child Development, 66, 1817-1828.

Maritz, G.S. & Thomas, R.A. (1994) The influence of maternal nicotine exposure on the interalveolar septal status of neonatal rat lung. Cell. Biol. Int. 18, 747-57.

Marlatt, G.A. (1985) Relapse Prevention: theoretical rationale and overview of the model. In: G.A. Marlatt & J.R. Gordon (eds) Relapse Prevention. New York. Guilford Press.

McCarthy, D. (1972) Manual for the McCarthy Scales of Children's Abilities. New York: Psychological Corporation.

McKnight, A. & Merret, J.D. (1986) Smoking in pregnancy-a health education problem. Journal of the Royal College of General Practitioners, Apr. 161-64.

McMaster, C. & Lee, C. (1991) Cognitive Dissonance in tobacco smokers. Addictive Behaviours, 16, 349-353.

Medina, E., Pascual, J.P., Cumsille, F., et al. (1986a) Encuesta de tabaquismo en la población general de Santiago. Rev Med Chil., 114, 257-262.

Medina, E., Rojas, C., Miranda, R., et al (1986b) Birth weight and smoking habit during pregnancy. Rev Chil Pediatr., 55, 279-284.

Meyer, M.B. & Tonascia, J.A. (1977) Maternal Smoking. Pregnancy complications and perinatal mortality. American Journal of Obstetrics and Gynecology, 128, 484-502.

Mikulincer, M., Florian, V. & Weller, A. (1993) Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the Gulf war in Israel. Journal of Personality and Social Psychology, 64, 817-826.

Milne, L., & Rich, O. (1981) Cognitive and affective aspects of the responses of pregnant women to sonography. Maternal Child Nursing Journal, 10, 15-39.

Mickelson, K.D., Kessler, R.C. & Shaver, P.R. (1997) Adult attachment in a nationally representative sample. Journal of Personality and Social Psychology, 73,1092-106.

Miyage, K. Chen, S., & Campos, J.J. (1985) Infant temperament, mother's mode of interaction and attachment in Japan. An Interim report. In I. Bretherton and E. Waters (Eds.). Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 276-297.

Moore, L., Campbell R., Whelan A., et al (2002) Self-help smoking cessation in pregnancy: cluster randomised controlled trial. British Medical Journal, 14, 325(7377): 1383.

Moss, A.J., Allen, K.F., Giovino, G.A. & Mills, S.L. (1992) Recent trends in adolescent smoking. Smoking-uptake correlates, and expectations about the future. Advance Data. 221, Dec.2. From Vital and Health Statistics of the Centers for Disease Control and Prevention/ National Center for Health Statistics. US Department of Health and Human Services.

Mulcahy & Murphy (1972) Maternal smoking and the timing of delivery. Journal of the Irish Medical Association, 65, 175.

Muller, M.E. (1993) Development of "The Prenatal Attachment Inventory". Western Journal of Nursing Research, 15, 199-215.

Muller, J. (1987) Smoking in Pregnancy: A Needs Assessment. Report to the Anti-Smoking Committee of the Queensland Cancer Fund. Queen Elizabeth Hospital, Brisbane, Queensland, Australia.

Naeye, N.L. and Peters E.C. (1984) Mental development of children whose mothers smoked during pregnancy. Obstetrics and Gynecology, 64, 601-7.

National Institute on Drug Abuse (1998) Teaching packet: The Neurobiology of Drug Addiction. Section II: The reward pathway and addiction. Electronic Publication. Http://www.nida.nih.gov

NHS Shefield (2004) Stop Smoking we all benefit. Electronic publication.

NHS (2004) Smoking and pregnancy "partners" campaign. Campaign rationale. Electronic publication. www.givingupsmoking.co.uk

Nicolaides-Bouman, A., Wald, N., Forey, B. & Lee, P. eds. (1993) International Smoking Statistics. A collection of historical data from 22 economically developed countries. Oxford University Press.

Nussbaum D, Rogers R. (1992). Screening Psychiatric Patients for Axis II Disorders. Can J Psychiatry, 37, 658-660.

Oakley, A. (1985) Social support in pregnancy: the "soft" way to increase birthweight? Social Science and Medicine, 30, 487-495.

Office of Population Censuses and Surveys. (1992) Infant feeding 1990: a survey. London: HMSO.

Olsen J. (1991) Cigarette smoking tea and coffe drinking and subfecundity. American Journal of Epidemiology, 133, 734-9.

Olsen J. (1993) Predictors of smoking cessation in pregnancy. Scandinavian Journal of Social Medicine, 21, 197-202.

Oppenheim, D. & Salatas Waters, H. (1995). Narrative processes and attachment representations: Issues of development and assessment. In: Caregiving, cultural, and cognitive perspectives on secure-base behaviour and working models: new growing points of attachment theory and research. Monographs of the Society for Research in Child Development. 244, 197-215.

Owens, G., Crowell, J. A., Pan, H., et al (1995) The Prototype Hypothesis and the origins of Attachment Working Models: Adult relationships with parents and romantic partners. In Caregiving, cultural, and cognitive perspectives on secure-base behaviour and working models: new growing points of attachment theory and research. Monographs of the Society for Research in Child Development. 244, 216-233.

Padron, M.D. & Sanchez B.B. (1990) Tabaquismo y embarazo. Rev Cuba Enferm. 6, 62-8.

Paez, D. et al (1985) Salud Mental y Factores Psicosociales. Madrid: Edit. Fundamentos.

Parker, G., Tupling, H. & Brown, L.B. (1979) A parental bonding instrument. British Journal of Medical Psychology, 52, 1-10.

Pascoe, J.M. (1985). Child Maltreatment and smoking during pregnancy. American Journal of Public Health, 75, 1452.

Patrick, M., Hobson, R.P., Castle, D., et al (1994) Personality disorder and the mental representation of early social experience. Development and Psychopathology, 6, 375-388.

Patton, D., Barnes, G.E. & Murray, R.P. (1993) Personality characteristics of smokers and ex-smokers. Personality and Individual Differences, 15, 653-664.

Patton, D., Barnes, G.E., Murray, R.P. (1997) A personality typology of smokers. Addict. Behav. 22, 269-73.

Pearson, J.L., Cohn, D.A., Cowan, P.A., & Cowan, C.P. (1994) Earned-and continuos-securityin adult attachment. Relation to depressive simptomatology and parenting style. Development and Psychopathology, 6, 359-373.

Phillips R.S., Tuomala R.E., Feldblum, P.J., et al (1992) The effect of cigarette smoking. Chlamydia Trachomatis infection, and vaginal douching on ectopic pregnancy. Obstetrics and Gynecology, 79, 85-90.

Pierce, J.P., Fiore, M.C., Novotny, T.E., et al (1989a) Trends in cigarette smoking in the United States: projections to the year 2000. Journal of the American Medical Association, 261, 61-65.

Pierce, J.P., Fiore, M.C., Novotny, T.E., et al (1989b) Trends in cigarette smoking in the United States: educational differences are increasing. Journal of the American Medical Association, 261, 56-60.

Pijlman FT, Wolterink G, Van Ree JM. (2003). Physical and emotional stress have differential effects on preference for saccharine and open field behaviour in rats. Behav Brain Res., 139(1-2),131-8.

Pomerleau, C.S. & Pomerleau, O.F. (1984) Neuroregulators and the reinforcement of smoking: towards a behavioural explanation. Neuroscience and Biobehaviour Reviews, 8, 503-513.

Pomerleau, O.F. & Pomerleau, C.S. (1991). A Biochemical perspective on smoking. In T. Ney & A Gale (Eds) Smoking and Human Behaviour. John Wiley and Sons.

Postwillo, D. & Alberman E. eds. (1992) Effects of Smoking on the Fetus, Neonate and Child. OUP.

Powell, J.H., Pickering, A.D., Dawkins, L., West, R., and Powell, J.F. (2004) Cognitive and psychological correlates of smoking abstinence, and predictors of successful cessation. Addictive Behaviours, 29, 7, 1407-1426.

Prechtl H.F.R. (1967) Neurological sequelae of prenatal and perinatal complications. British Medical Journal. II, 763-7.

Quinn, V.P., Mullen, P.D. & Ersoff, D.H. (1991) Women who stop smoking spontaneously prior to prenatal care and predictors of relapse before delivery. Addictive Behaviours, 16, 29-40.

Ramsey N.F., Van Ree J.M.(1993). Emotional but not physical stress enhances intravenous cocaine self-administration in drug-naive rats. Brain Res., 608(2):216-22

Raphael-Left, J. (1991). Psychological Processing of Childbearing. London: Chapman and Hill.

Rantakallio, P., Laara, E., Isohani, M. & Moilahen, I. (1992) Maternal smoking during pregnancy and delinquency of the offspring: an association without causation? International Journal of Epidemiology, 21, 1106-13.

Reading, A., Campbell, S., Cox, D. & Sledmere, C. (1982) Health beliefs and health care behaviour in pregancy. Psychological Medicine, 12, 379-383.

Reading, A. & Cox, D. (1982). The effects of ultrasound examination on maternal anxiety levels. Journal of Behavioural Medicine, 5, 237-247.

Registrar General (1971) Classification of Occupations. London: HSMO.

Reid, M.S., Mickalian, J.D., Delucchi, K.L., Hall, S.M. and Berger, S.P., (1998). An acute dose of nicotine enhances cue-induced cocaine craving. Drug and Alcohol Dependence 49, pp. 95–104.

Reite, M.L. & Capitanio, J. (1985) On the nature of social separation and social attachment. In M. Reite & T. Field (Eds.) The psychobiology of attachment and separation. (pp.222-255). Orlando, FL: Academic Press.

Reite, M.L., Seiler, C. & Short, R. (1978) Loss of your mother is more than loss of a mother. American Journal of Psychiatry, 135, 370-371.

Richardson, S.A., and Tizabi, Y. (1994) Hyperactivity in the offspring of nicotine-treated rats: role of the mesolimbic and nigrostriatal dopaminergic pathways. Pharmacol. Biochem. Behav, 47, 331-7.

Ricks, M. (1985) The social transmission of parental behaviour: Attachment across generation. In I. Bretherton & E. Waters (Eds.), Growing points in attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 211-227.

Richman, N. & Graham, P.J. (1971) A behavioural screening questionnaire for use with

three year old children: preliminary findings. Journal of Child Psychology and Psychiatry, 12, 5-33.

Robinson, T.E. and Berridge, K.C., (2000). The psychology and neurobiology of addiction: An incentive-sensitization view. Addiction 95, pp. S91–S117.

Rosenstein, D.S. & Horowitz, H.A. (1996) Adolescent attachment and psychopathology. Journal of Consulting and Clinical Psychology, 64.

Rosevear S.K., Holt D.W., Lee, T.D., et al (1992) Smoking and decrease fertilization rates in vitro. Lancet, 340, 1195-6.

Rothbard, J.C., & Shaver, P.R. (1995) Continuity of attachment across the life span. In M.B. Sperling & W.H. Berman (Eds.) Attachment in Adults, Clinical and developmental Perspectives (pp.31-71). New York: Guilford Press.

Roy, T.S. & Sabherwal, U. (1994) Effects of prenatal nicotine exposure on the morphogenesis of somatosensory cortex. Neurotoxicol. Teratol., 16, 411-21.

Ruble, D.N., Hackle, L.S., Fleming, A.S. & Stangor, C. (1985) Changes in the marital relationship during the transition to first time motherhood. Effects of violated expectations concerning of household labour. Journal of Personality and Social Psychology, 55, 8-8.

Russell, C.S. (1974) Transition to parenthood: problems and gratifications. Journal of Marriage and the Family, 36, 294-302.

Rust, J., Bennun, I., Crowe, M. et al. (1988) The Golombok Rust Inventory of Marital State. Windsor: NFER-Nelson.

Rutter, M. (1979) Separation experiences: a new look at an old topic. Journal of Pediatrics, 95, 147-154.

Sable, P. (1989) Attachment , anxiety and loss of a husband. American Journal of Orthopsychiatry, 59, 550-556.

Scheper- Hughes, N. (1992) Death without weeping: the violence of everyday life in Brazil. Berkeley: University of California Press.

Seifer, R. & Schiller, M. (1995) The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. In: Caregiving, cultural, and cognitive perspectives on secure-base behaviour and working models: new growing points of attachment theory and research. Monographs of the Society for Research in Child Development. 244, 146-176.

Self, D.W., (1998). Neural substrates of drug craving and relapse in drug addiction. Annals of Medicine, 30, pp. 379–389.

Seller, M.J. & Bnait, K.S. (1995) Effects of tobacco smoke inhalation on the developing mouse embryo and fetus. Reproductive Toxicology, 9, 449-59.

Shaver, P.R & Fraley, R.C. (2002) Self-Report Measures of Adult Attachment. Electronic Publication. http://tigger.uic.edu/fraley/measures/measures.html

Sheldon, A.E.R. & West, M. (1990) Attachment pathology vs. low social skills in avoidant personality disorder. Canadian Journal of Psychiatry, 35, 596-599.

Shiffman, S.M. (1985) Coping with temptations to smoke. In S. Shiffman and T A Willis (Eds).Coping and Substance Use. Academic Press.

Silvestre, D. & Fresco, N. (1980) Reactions to prenatal Diagnosis: An analysis of 87 interviews. American Journal of Orthopsychiatry, 50, 610-617.

Simpson, J.A. (1990) Influence of attachment styles on romantic relationships. Journal of Personality and Social Psychology, 59, 971-980.

Simpson, J.A., Rholes, W.S., & Nelligan, J.S. (1992) Support-seeking and support-giving within couple members in an anxiety-provoking situation: the role of attachment styles. Journal of Personality and Social Psychology, 62, 434-446.

Slotkin, T.A., McCook, E.C. & Seidler, F.J. (1997) Criptic brain injury caused by fetal nicotine exposure is associated with persistent elevations of c-fos proontogene expression. Brain Research, 750, 180-8

Slotkin, T.A., Lappi, S.E., MacCook, E.C., et al (1995) Loss of neonatal hypoxia tolerance after prenatal nicotine exposure: implications for sudden infant death syndrome. Brain Research Bullutin, 38, 69-75.

Smith, J. & George, C. (1993) Working models of attachment and adjustment to college: parents, peers and romantic partners as attachment figures. Presented at the biennial meeting of the Society for Research in Child Development, New Orleans, L A, March.

Sperling, M.B., & Berman, W.H. (1991) An attachment classification of desperate love. Journal of Personality Assessment, 56, 45-55.

Spitzer, R., Endicott, J. & Robins, E. (1978) Research Diagnostic Criteria: Rationale and reliability. Archives of General Psychiatry, 35, 773-782.

Sroufe, L.A. (1983). Infant-caregiver attachment and patterns of adaptation in preschool: The roots of maladaptation and competence. In M. Perlmutter (Ed.) Minnesotta Symposia in Child Psychology (Vol. 16, pp.41-83). Hillsdale, NJ: Lawrence Erlbaum Associates.

Sroufe, L.A., Egeland, B. & Kreutzer, T. (1990) The fate of early experience following developmental change: Longitudinal approaches to individual adaptation in childhood. Child Development, 61, 1363-1373.

Steele, H., Steele, M., & Fonagy, P. (1996) Associations among attachment classifications of mothers, fathers, and their infants. Child Development, 67, 541-555.

Stewart, E.D. & Strainer, D.L. (1995) Cigarette smoking during pregnancy. Canadian Journal of Psychiatry, 40, 603-7.

Strauss, A. & Corbin, J. (1994) Grounded theory methodology, an overview. In: N. Delzin and Y. Lincoln (eds.), Handbook of Qualitative Research. London: Sage.

Suonio S., Saarikoski S., Kauhanen, O., et al (1990) Smoking does affect fecundity. Eur J Obstet Gynecol Reprod Biol. 34, 89-95.

Thompson, R.A., Lamb, M.B. & Estes, D. (1983) Armonizing discordant notes: A reply to Waters. Child Development, 54, 521-524.

Tolson, C.M., Seidler, F.J., McCook, E.C. & Slotkin, T.A. (1995) Does concurrent or prior nicotine exposure interact with neonatal hypoxia to produce cardiac cell damage? Teratology, 52, 298-305.

Troy, M. & Sroufe, L.A. (1987) Victimization among preschoolers: Role of attachment relationship history. Journal of the American Academy of Child Psychiatry, 26, 166-172.

Tunstall, C.D., Ginsberg, D. & Hall, S.M. (1985) Quitting Smoking. International Journal of the Addictions, 20, 1089-1112.

Turnbull, C.M. (1972) The mountain people. New York: Simon & Schuster.

Uehara T, Sakado K, Sato T. (1997) Test-retest reliability of the Personality Diagnostic Questionnaire: Revised Psychiatry Clin Neurosci.,51(6):369-72.

US Department of Health and Human Services. (1989) Reducing the Health Consequences of Smoking: 25 years of Progress: a Report of the Surgeon General

US Department of Health and Human Services. Public Health Service. Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, DHHS Publication No (CDC), 89-8411.

US Department of Heath and Human Services. (1990) The Health Benefits of Smoking Cessation: a Report of the Surgeon General. Office of Smoking and Health, Rockville Maryland. DHSS Publication No. (CDC), 90-8416.

US Department of Health and Human Services. (1990b) Public Health Service. Hazards of prenatal exposure to alcohol, tobacco and other drugs. Alcohol, Tobacco and Other Drugs may Harm the Unborn. Washington DC: ADM US Department of Health and Human Services, Publication Number ADM 90-1711, 1990, 15-46.

Van den Boom, D.C. (1994) The influence of temperament and mothering on attachment and exploration: an experimental manipulation of sensitive responsiveness among lower-class mothers with irritable infants. Child Development, 65, 1457.

Van Ijzendoorn, M.H. (1995a) Of the way we are: on Temperament, Attachment, and the Transmission gap: A rejoinder to Fox (1995). Psychological Bulletin, 3, 411-415.

Van Ijzendoorn, M.H. (1995b) Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive value of the Adult Attachment Interview. Psychological Bulletin, 117, 387-403.

Van Ijzendoorn, M.H. & Bakermans-Kranenburg, M. (1996) Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. Journal of Consulting and Clinical Psychology, 64, 8-21.

Vaughn, B.E., Egeland, B.R., Sroufe, L.A. & Waters, E. (1979) Individual Differences in infant-mother attachment at 12 and 18 month: Stability and change in families under stress. Child Development, 50, 971-975.

Vio del Rio, F., Salinas, J., Mardones, F. & Albala, C. (1984) Smokers among poor urban pregnant and lactating mothers in Santiago. Rev Med Chile. 112, 935-938.

Wakefield, M., Gillies, P., Graham, H., et al (1993) Characteristics associated with smoking cessation during pregnancy among working class women. Addiction, 88, 1423-1430.

Wald, N., Kiryluk, S., Darby, S., et al (1988) UK Smoking Statistics. Oxford University Press.

Wallace, J. & Vaux, A. (1993) Social support network orientation: the role of attachment style. Journal of Social and Clinical Psychology, 12, 354-365.

Wallerstein, J.S. & Blakeslee, S. (1989) Second chances: men, women, and children a decade after divorce. New York: Ticknor & Fields.

Walsh R. & Redman S. (1993) Smoking cessation in pregnancy: do effective programmes exist? Health Promotion International, 8, 111-127.

Waters, E. (1978) The reliability and stability of individual differences in infant-mother attachment. Child Development, 49, 483-494.

Waters, E., Merrik, S.K., Albersheim, L.J. & Treboux, D. (1995, March). Attachment security from infancy to early adulthood: A 20-year longitudinal study. Paper presented at the biennial meeting of the Society for Research in Child Development, Indianapolis, IN.

Waterson, E.J., Evans, C. & Murray-Lyon, I.M. (1990) Is pregnancy a time of changing drinking and smoking patterns for fathers as well as mothers? An initial investigation. British Journal of Addiction, 85, 389-96.

Weiss, R.S. (1975) Marital Separation. New York: Basic Books.

Weiss, R.S. (1991) The attachment bond on childhood and adulthood. In C. M. Parkes, J. S. Hinde & P. Marris (Eds.). Attachment across the life cycle (pp.66-76). London: Routledge.

Wells, J. & Batten, L. (1990) Women smoking and coping: an analysis of women's experience of stress. Health Education Journal, 49, 57-60.

West, M.L. & Sheldon-Keller, A.E.R. (1992) The assessment of dimensions relevant to adult reciprocal attachment. Canadian Journal of Psychiatry, 34, 369-375.

West, M.L. & Sheldon-Keller, A.E. (1994) Patterns of Relating, an adult attachment perspective. New York. Guilford Press.

West, M.L., Keller, A., Links, P. & Patrick, J. (1993) Borderline disorder and attachment pathology. Canadian Journal of Psychiatry, 18, 16-22.

West, M.L., Rose, M.S. & Sheldon, A. (1993). Anxious attachment as a determinant of adult psychopathology. Journal of Nervous and Mental Disease, 8, 422-427.

West, R., MacNeill, A. & Raw. M. (2000) Smoking cessation guidelines for health professionals: an update. Thorax, 55, 987-999.

West, R.J. and Russell, M.A.H. (1985) Pre-abstinence smoke intake and smoking motivation as predictors of severity of cigarette withdrawal symptoms. Psychopharmacology, 87, 334-336.

West, R.J., Russell, M.A.H., Jarvis, M.J., et al (1984) Urinary Adrenaline Concentrations during ten days of smoking abstinence. Psychopharmacology, 84, 142-142.

White, A.R. & Rampes, H. (1998) Acupuncture in smoking cessation. The Cochrane Library Issue 2. Oxford: Update Software.

Whiteman, M.C., Fowkes, F.G., Deary, I.J. & Lee, A.J. (1997) Hostility, cigarette smokng and alcohol consumption in the general population. Social Science and Medicine, 44, 1089-96.

Wicklund, S. & Brehm, C. (1974) Cognitive Dissonance Theory: New Developments.

Wilhem, K. & Parker, G. (1988) The development of a measure of intimate bonds. Psychological Medicine, 18, 225-234.

Wisborg, K., Henriksen T.B. & Secher, N.J. (1998) A prospective intervention study of stopping smoking in pregnancy in a routine antenatal care setting. British Journal Obstetrics and Gynaecology, 105, 1171-6.

Wise, R.A. and Munn, E., (1995). Withdrawal from chronic amphetamine elevates baseline intracranial self-stimulation thresholds. Psychopharmacology, 117, pp. 130–136.

World Health Organization. (1998a) Tobacco use: a Public Health disaster. WHO Electronic Publications.

World Health Organization. (1998b) The next wave of the tobacco epidemic: Women. WHO Electronic Publication.

World Health Organization. (1997) Smoking and Women. The next wave of the Tobacco Epidemic. Fact Sheets. N176. WHO Electronic Publication.

World Health Organization. (1993) International Classification of Diseases -10. Geneva: WHO.

Yeung, A.S., Lyons, M.J., Waternaux, C.M., et al (1993) Empirical determination of thresholds for case identification: validation of the personality Diagnostic Questionnaire-Revised. Comprehensive Psychiatry, 34, 384-91.

Zachariah, R. (1994) Maternal-fetal attachment: influence of mother-daugther and husband-wife relationships. Res Nurs Health. 17, 37-44.

Zambrana R.E., Hernandez, M., Dunkell-Schetter, C. (1991) Ethnic differences in the substance use patterns of low-income pregnant women. Conference of the American Society for Psychosomatic Obstetrics and Gynaecology 1989. Orlando, Florida. Family and Community Health, 13, 1-11.

Zuckerman, B.J., Amaro, H., Baucher, H., et al. (1989) Depressive symptoms during pregnancy: relationship to poor health behaviours. American Journal Obstetrics and Gynecology, 160, 1107-1111.

Zuckerman, M., Ball, S.A. & Black, J. (1990) Influences of sensation-seeking, gender, risk appraisal and situational motivation on smoking. Addictive Behaviours, 15, 209-220.

Appendix A

The Maternal-Fetal Attachment Questionnaire (Condon,1993)

A B Q – 19 – M

1) Over the past two weeks I have though about, or been preoccupied with the baby inside me:

[ ] Almost all the time

[ ] Very frequently

[ ] Frequently

[ ] Occasionally

[ ] Not at all

2) Over the past two weeks when I have spoken about, or thought about the baby inside me I got emotional feeling which were:

[ ] Very weak or non – existent

[ ] Fairly weak

[ ] In between strong and weak

[ ] fairly strong

[ ] Very strong

3) Over the past two weeks my feelings about the baby inside me have been:

[ ] Very positive

[ ] Mainly positive

[ ] Mixed positive and negative

[ ] Mainly negative

[ ] Very negative

4) Over the past two weeks I have had the desire to read about or get information about the developing baby. This desire is:

[ ] Very weak or non – existent

[ ] Fairly weak

[ ] Neither strong nor weak

[ ] Moderately strong

[ ] Very strong

5) Over the past two weeks I have been trying to picture in my mind what a developing baby actually looks like in my womb:

[ ] Almost all the Time

[ ] Very frequently

[ ] Frequently

[ ] Occasionally

[ ] Not at all

6) Over the past two weeks I think of the developing baby mostly as:

[ ] A real little person inside me with special characteristics

[ ] A baby like any other baby

[ ] A human being

[ ] A living thing

[ ] A thing nor really alive

7) Over the past two weeks I have felt that the baby inside my is dependant on me for its well-being:

[ ] Totally

[ ] A great deal

[ ] Moderately

[ ] Slightly

[ ] Not at all

8) Over the past two weeks I have found my self talking with to my baby when I am alone:

[ ] Not at all

[ ] Occasionally

[ ] Frequently

[ ] Very frequently

[ ] Almost all the time I am alone

9) Over the past two weeks when I think about (or talk to) my baby inside me, my thoughts:

[ ] Are always tender and loving

[ ] Are mostly tender and loving

[ ] Are a mixture of both tenderness and irritation

[ ] Contain a fair bit of irritation

[ ] Contain a lot of irritation

10) The picture in my mind of what the baby at this stage actually looks like inside the womb is:

[ ] Very clear

[ ] Fairly clear

[ ] Fairly vague

[ ] Very vague

[ ] I have not idea at all

11) Over the past two weeks when I think about the baby inside me I get feelings which are:

[ ] Very sad

[ ] Moderately sad

[ ] A mixture of happiness and sadness

[ ]Moderately happy

[ ] Very happy

12) Some pregnant women sometimes get so irritated by the baby inside them that they feel like they want to hurt it or punish it:

[ ] I couldn't imagine I would ever feel like this

[ ] I could imagine I might sometimes feel like this, but I never actually have

[ ] I have felt like this once or twice myself

[ ] I have occasionally felt like this myself

[ ] I have often felt like this myself

13) Over the past two weeks I have felt:

[ ] Very emotionally distant from my baby

[ ] Moderately emotionally distant from my baby

[ ] Not particularly emotionally close to my baby

[ ] Moderately emotionally close to my baby

[ ] Very emotionally close to my baby

14) Over the past two weeks I have taken care with what I eat to make sure the baby gets a good diet.

[ ] Not at all

[ ] Once or twice when I ate

[ ] Occasionally when I ate

[ ] Quite often when I ate

[ ] Every time I ate anything

15) <u>When I first</u> see my baby after the birth a expect I will feel:

[ ] Intense affection

[ ] Mostly affection

[ ] Dislike about one or two aspects of the baby

[ ] Dislike about quite a few aspects of the baby

[ ] Mostly dislike

16) <u>When my baby</u> is born I would like to hold the baby:

[ ] Immediately

[ ] After its has been wrapped in blanket

[ ] After it has been washed

[ ] After I have had a rest for an hour or so

[ ] The next day

17) <u>Over the</u> past two weeks I have had dreams about the pregnancy or baby:

[ ] Not at all

[ ] Occasionally

[ ] Frequently

[ ] Very frequently

[ ] Almost every night

18) <u>Over the past two weeks</u> I have found myself feeling, or rubbing with my hand, the outside of my stomach where the baby is:

[ ] A lot of times each day

[ ] At least once a day

[ ] Occasionally

[ ] Once a day

[ ] Not at all

19) If the pregnancy was lost at this time (due to miscarriage or other accidental event) without any pain or injury to myself, I expect I would feel:

[ ] Very pleased

[ ] Moderately pleased

[ ] Neutral (ie neither said nor pleased; or mixed feelings)

[ ] Moderately sad

[ ] Very sad

MATERNAL ANTENATAL ATTACHMENT ITEMS (1-19)

QUALITY OF ATTACHMENT	TIME SPENT IN ATTACHMENT MODE
19	(1)
(3)	(5)
11	8
(12)	4
(15)	2
13	17
(16)	(18)
(9)	14
(10)	
(6)	

(Item 7 does not load on either factor strongly enough for inclusion on subscales).

( ) Denotes reverse scoring.

Appendix B

The Adult Reciprocal Attachment Questionnaire (West and Sheldon-Keller, 1994)

INSTRUCTIONS

On the following pages you will find a series of statements. In each instance, you are asked to rate how strongly you agree that the statement is typical of you.

Look at the following examples:

	Strongly Disagree			Strongly Agree
1. At parties, I like to talk to everyone.....1	2	3	4	5
2. I like to spend most of my time alone...1	2	3	4	5

The person by answering the first statement with a "5", indicated that he or she strongly agreed with the statement "At parties, I like to talk to everyone". In the second example, the person disagreed with the statement "I like to spend most of my time alone". You might have circled different numbers in the space next to each statement.

****

In this questionnaire, you will find questions about your relationship to one special person in your life, we mean:

- Mostly likely the person you are living with or romantically involved with
- The person you'd most likely expect to turn to for comfort, help, advice, love or understanding.
- The person you'd be most likely to depend on, and who may depend on you for some things.

This person, may be your husband, boyfriend, or another special friend. You may have several people in your life whom you are close to in different ways, or it may be difficult to think of one person who means that much to you.

To answer the following questions, think of the person you feel closest to right now, even if the descriptions don't all seem to quite fit.

Is there someone in your life right now whom you would describe as above?

_____ Yes
_____ No

<u>In terms of type of relationship</u>

This person is my....., ... (First Name)
(For example, this person is my boyfriend, John)

Please think about each question and answer carefully, but do not worry if some questions are hard to answer exactly. Do the best you can and trust your own judgements.
Remember, <u>this questionnaire is not a test</u>, there are no right or wrong answers, the questions simply describe different relationships. Thank you for your help.

Please, before answering the questionnaire fill the blanks with the name of the person you wrote above.

1	2	3	4	5
strongly disagree	disagree	somewhat agree and somewhat disagree	agree	strongly agree

1. I turn to _____ for many things, including comfort and reassurance 1 2 3 4 5

2. I wish there was less anger in my relationship with _____ _____ 1 2 3 4 5

3. I put _____'s needs before my own 1 2 3 4 5

4. I get frustrated when _____ is not around as much as I would like 1 2 3 4 5

5. I feel it is best not to depend on _____ 1 2 3 4 5

6. I want to get close to _____ but I keep pulling back 1 2 3 4 5

7. I often feel too dependent on _____ 1 2 3 4 5

8. I can't get on with my work if _____ has a problem 1 2 3 4 5

9. I enjoy taking care of _____ 1 2 3 4 5

10. I don't object when _____ goes away for a few days 1 2 3 4 5

11. I'm confident that _____will try to understand my feelings 1 2 3 4 5

12. I wish that I could be a child again and be taken care of by _____ _____.....1 2 3 4 5

13. I worry that _____will let me down 1 2 3 4 5

14. I wouldn't want _____ relying on me 1 2 3 4 5

15. I resent it when _____ spends time away from me 1 2 3 4 5

1	2	3	4	5
strongly disagree	disagree	somewhat agree and somewhat disagree	agree	strongly agree

16. I have to have _____ with me
when I'm upset 1 2 3 4 5

17. I rely on myself and not _____
to solve my problems 1 2 3 4 5

18. When I'm upset, I am confident _____
will be there to listen to me 1 2 3 4 5

19. I usually discuss my problems and concerns with _____
_____.....1 2 3 4 5

20. I feel abandoned when _____ is away
for a few days..... 1 2 3 4 5

21. I have a terrible fear that my relationship with _____
_____ will end 1 2 3 4 5

22. I do not need _____ to take care
of me 1 2 3 4 5

23. _____ only seems to notice me
when I am angry 1 2 3 4 5

24. I talk things over with _____..... 1 2 3 4 5

25. It's easy for me to be affectionate with _____
_____ 1 2 3 4 5

26. I expect _____ to take care of his/ her
own problems 1 2 3 4 5

27. I'm afraid that I will lose _____
_____'s love 1 2 3 4 5

28. I feel lost if I'm upset and _____
is not around 1 2 3 4 5

29. I'm furious that I don't get any comfort from _____
_____ 1 2 3 4 5

30. I'm so used to doing things on my own that I don't ask _____
_____ 1 2 3 4 5

1	2	3	4	5
strongly disagree	disagree	somewhat agree and somewhat disagree	agree	strongly agree

31. I'm confident that _____ will always love me 1 2 3 4 5

32. I'm never certain about what I should do until I talk to _____ _____ 1 2 3 4 5

33. I would be helpless without _____ 1 2 3 4 5

34. Things have to be really bad for me to ask _____ for help 1 2 3 4 5

35. I get really angry at _____ because I think he /she could make more time for me..... 1 2 3 4 5

36. I often feel angry with _____ without knowing why 1 2 3 4 5

37. I feel that the hardest thing to do is to stand on my own _____..... 1 2 3 4 5

38. I feel that there is something wrong with me because I'm remote from _____ 1 2 3 4 5

39. I don't make a fuss over _____ 1 2 3 4 5

40. I don't sacrifice my own needs for the benefit of _____ _____..... 1 2 3 4 5

41. _____is always disappointing me 1 2 3 4 5

42. When I am anxious I desperately need to be close to _____ _____-.....1 2 3 4 5

43. It makes me feel important to be able to do things for _____ _____.....1 2 3 4 5

RECIPROCAL ATTACHMENT QUESTIONNAIRE ITEMS

CODING: R= Reverse coding

D= Direct coding

DIMENSIONS OF ATTACHMENT

PROXIMITY SEEKING:

CODING		ITEM
D	16.	I have to have my attachment figure with me when I'm upset.
D	28.	I feel lost if I'm upset and my attachment figure is not around.
D	42.	When I am anxious I desperately need to be close to my attachment figure.

SEPARATION PROTEST:

CODING		ITEM
R	10.	I don't object when my attachment figure goes away for a few days.
D	15.	I resent it when my attachment figure spends time away from me.
D	20.	I feel abandoned when my attachment figure is away for a few days.

FEARED LOSS:

CODING		ITEM
D	21.	I have a terrible fear that my relationship with my attachment figure will end.
D	27.	I'm afraid that I will lose my attachment figure's love.
R	31.	I'm confident that my attachment figure will always love me.

AVAILABILITY:

CODING		ITEM
R	11.	I'm confident that my attachment figure will try to understand my feelings.
D	13.	I worry that my attachment figure will let me down.
R	18.	When I'm upset, I am confident my attachment figure will be there to listen to me.

USE:

CODING		ITEM
R	1.	I turn to my attachment figure for many things, including comfort and reassurance.
R	24.	I talk things over with my attachment figure.
D.	34.	Things have to be really bad for me to ask my attachment figure for help.

ANGRY WITHDRAWAL:

CODING		ITEM
D	2.	I wish there was less anger in my relationship with my attachment figure.
D	4.	I get frustrated when my attachment figure is not around as much as I would like.
D	23.	My attachment figure only seems to notice me when I am angry.
D.	29.	I'm furious that I don't get any comfort from my attachment figure.
D	35.	I get really angry at my attachment figure because I think he/she could make more time for me.
D	36.	I often feel angry with my attachment figure without knowing why.
D	41.	My attachment figure is always disappointing me.

COMPULSIVE CARE-GIVING:

CODING		ITEM
D	3.	I put my attachment figure's needs before my own.
D	8.	I can't get on with my work if my attachment figure has a problem.
D	9.	I enjoy taking care of my attachment figure.
R	26.	I expect my attachment figure to take care of his/her own problems.
R	39.	I don't make a fuss over my attachment figure.
R	40.	I don't sacrifice my own needs for the benefit of my attachment figure.
D	43.	It make me feel important to be able to do things for my attachment figure.

COMPUSLIVE SELF-RELIANCE

CODING		ITEM
D	5.	I feel it is best not to depend on my attachment figure.
D	6.	I want to get close to my attachment figure, but I keep pulling back.
D	14.	I wouldn't want my attachment figure relying on me.
R	19.	I usually discuss my problems and concerns with my attachment figure.
R	25.	It's easy for me to be affectionate with my attachment figure.
D	30.	I'm so used to doing things on my own that I don't ask my attachment figure for help.
D	38.	I feel that there is something wrong with me because I'm remote from my attachment figure.

COMPULSIVE CARE-SEEKING:

CODING		ITEM
D	7.	I often feel to dependent on my attachment figure.
D	12.	I wish that I could be a child again and be taken care of by my attachment figure.
R	17.	I rely on myself and not my attachment figure to solve my problems.
R	22.	I do not need my attachment figure to take care of me.
D	32.	I'm never certain about what I should do until I talk to my attachment figure.
D	33.	I would be helpless without my attachment figure.
D	37.	I feel that the hardest thing to do is to stand on my own.

Appendix C

The Adult Avoidant Attachment Questionnaire (West and Sheldon-Keller, 1994)

1	2	3	4	5
strongly disagree	disagree	somewhat agree and somewhat disagree	agree	strongly agree

1. Closeness to others frightens me because they may reject me.....1 2 3 4 5
2. I don`t let anyone get close to me.....1 2 3 4 5
3. I am afraid of getting close to others.....1 2 3 4 5
4. I have a hard time giving affection to someone.....1 2 3 4 5
5. I have built a wall around myself.....1 2 3 4 5
6. Whenever I feel myself getting close to someone I push them away.....1 2 3 4 5
7. I look to others for support.....1 2 3 4 5
8. I only feel secure when I am by myself.....1 2 3 4 5
9. I take great pride in not needing anyone.....1 2 3 4 5
10. My strength comes only from myself.....1 2 3 4 5
11. I don`t need anyone.....1 2 3 4 5
12. I get my sense of security from myself.....1 2 3 4 5
13. Caring for someone would make me feel weak and exhausted.....1 2 3 4 5
14. Being close to someone makes me think of suffocation.....1 2 3 4 5
15. I would lose my feeling of security if I had to share my life with someone.....1 2 3 4 5
16. I am afraid to care for someone because I would lose myself.....1 2 3 4 5
17. Needing someone would make me feel weak.....1 2 3 4 5
18. I wish I had some one with whom I could share my whole life.....1 2 3 4 5
19 I wish I had a single lasting relationship.....1 2 3 4 5
20. It bothers me that I have no close ties to anyone.....1 2 3 4 5
21. I long for someone to share my feelings with.....1 2 3 4 5
22. I wish there was someone close who needed me.....1 2 3 4 5

Appendix D

The Adult Attachment Instrument (Hazan and Shaver, 1987)

AAQ (1)

The following questionnaire, in two brief parts, is concerned with your experiences in romantic love relationships. Take a moment to think about all of the most important romantic relationship you've been involved in. For each relationship think about: How happy or unhappy you were, and how your moods fluctuated. How much you trusted or distrusted each other. Whether you felt you were too close emotionally or not close enough. The amount of jealousy you felt. How much time you spent thinking about your partner. How attracted you were to the person. How the relationship might have been better. How it ended. (Thinking about these good and bad memories of various relationships will help you answer the following questions accurately).

Part I

Read each of the three self-descriptions below (1,2, and 3) and then rate how much you agree or disagree that each one describes the way you generally are in love relationships. Circle one of the numbers below each self-description. (Note: The terms "close" and "intimate" refer to psychological or emotional closeness, not necessarily to sexual intimacy.)

1. I am somewhat uncomfortable being close to others; I find it difficult to trust them. I am nervous when anyone gets close, and often, love partners want me to be more intimate than I feel comfortable being. (Circle one number below).

Disagree Strongly	Disagree Moderately	Disagree Slightly	Mixed not sure	Agree Slightly	Agree Moderately	Agree Strongly
1	2	3	4	5	6	7

2. I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't to stay with me. I want to get very close to my partner, and this sometimes scares people away. (Circle one number below).

Disagree Strongly	Disagree Moderately	Disagree Slightly	Mixed not sure	Agree Slightly	Agree Moderately	Agree Strongly
1	2	3	4	5	6	7

3. I find it relatively easy to get close to others and am comfortable depending on them. I don't often worry about being abandoned or about someone getting too close to me. (Circle one number below).

Disagree Strongly	Disagree Moderately	Disagree Slightly	Mixed not sure	Agree Slightly	Agree Moderately	Agree Strongly
1	2	3	4	5	6	7

Part II

Below, the three options from the previous page are printed again. Please place a checkmark next to the single alternative that best describes how you feel in romantic love relationships.

1._____ I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.

2. _____ I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to get very close to my partner, and this sometimes scares people away.

3. _____ I find it relatively easy to get close to others and am comfortable depending on them. I don't often worry about being abandoned or about someone getting too close to me

Appendix E

The Adult Attachment Style Interview (Bifulco et al., 2002)

ATTACHMENT SCHEDULE

ATTACHMENT STYLE 20 July 1994

SUMMARISE OVERALL ATTACHMENT STYLE		ID	
NON-STANDARD	STANDARD	RATER	
ENMESHED.....	.....		
FEARFUL.....	.....		
DISMISSIVE.....	.....		
WITHDRAWN	.....		
CLEARLY STANDARD			

The following scales are mainly subjective and involve S's thoughts and feelings about herself in relation to other people in general. These are to reflect attitudes at the time of interview and the prior 6 months or so. Only refer to historical material if it is consistent with the present picture.

The only behavioural scale is 'Ability to make and maintain relationships' this is an interviewers judgement based on S's current 'success' at relationships.

Use SESS material for background objective assessments of relationships. For example negative interaction, dependence, felt attachment, confiding and active emotional support.

PAGE

MISSING

IN

ORIGINAL

ATTACHMENT SCHEDULE

ATTITUDINAL CONSTRAINTS RE PRIMARY/CONFIDING RELATIONSHIPS AND HELP-SEEKING

The existence within S of attitudinal blockages inhibiting the development or maintenance of close confiding relationships and care eliciting.

INDICATOR OF ATTITUDINAL CONSTRAINTS	HIGH	MODERATE	SOME/ NONE
Extent to which S finds it difficult to get close to others.			
The extent S finds it difficult to confide in others.			
The extent to which S has problems in asking others for help.			
The extent to which there are whole categories of people she won't /go to: kin, non-kin etc			
The extent to which she feels too proud to approach others for help or support.			
The extent to which she feels too humble to approach others for help or support.			

Rate:
1. Marked
2. Moderate
3. Some
4. Little/none

Notes:

ATTACHMENT SCHEDULE

MISTRUST OF OTHERS

The extent to which S lacks trust in either those close to her, or outsiders. The extent to which she is suspicious of the motives and behaviour of others.

INDICATOR OF MISTRUST OF OTHERS	HIGH	MODERATE	SOME/ NONE
Extent to which S describes herself as mistrustful.			
The extent to which she is suspiscious of the motives of those close to her.			
The extent to which she is suspicious of those less close/outsiders.			
Extent to which she feels most people are only out for themselves.			
Extent to which she feels she can't trust people in case they let her down.			
Extent to which past experiences have made her mistrustful.			
Other.			

Rate:
1. Marked
2. Moderate
3. Some
4. Little/none

Notes:

ATTACHMENT SCHEDULE

S'S DESIRE FOR ENGAGEMENT/ENMESHMENT IN RELATIONSHIPS

The extent to which S likes to have a high degree of contact with close others; has high dependency on others; likes a high level of companionship. If S does not have such contact but craves it, then this can rate highly. Conversely if she has such contact but dislikes it, rate lower.

INDICATOR OF DESIRE FOR ENGAGEMENT/ENMESHMENT IN RELATIONSHIPS	HIGH	MODERATE	SOME/ NONE
Extent to which S has a high degree of contact with friends/ support figures (behavioural).			
The extent to which she expresses a need for high contact with others.			
The extent to which S is very dependent on others for company.			
The extent to which S expresses a high need for confiding and sharing.			
The extent to which she is posessive of others.			
The extent to which S needs reassurance from others.			

Rate:
1. Marked
2. High moderate
3. Low moderate
4. Low

Notes:

ATTACHMENT SCHEDULE

INTERVIEWER ASSESSMENT OF S'S ABILITY TO MAKE AND MAINTAIN RELATIONSHIPS.

Interviewer judgement of the extent to which S currently derives support and pleasure from her relationships. Consider her range of relationships and behaviour within them.
To merit a '1' or '2' rating S should have at least one support figure in whom she can confide and derive support, and a range of relationships (e.g. partner, children, contact with family etc. However, it is not essential for S to have partner or children for such a rating.

Focus on current relationships: but if a history of relationships is consistent with the current picture than these can also be taken into account.

INDICATOR OF ABILITY TO MAKE AND MAINTAIN RELATIONSHIPS	HIGH	MODERATE	SOME/ NONE
Partner: Extent to which she is a good partner (Is there a history of good relationships) (Do not 'penalise' if no partner - consider other relationships)			
Children: Extent to which she relates well to children (e.g. not rejecting, over-possessive)?			
VCO/confidant: Succes with relationships outside the home: support figures and friendships.			
Family of origin: Extent of close/supportive/ stable relationship with parents and siblings.			
Other relationships Extent of good interactions with other relationships (in-laws, work colleagues etc)			
Extent to which S has social contacts outside the home (acquaintances etc?)			
Other			

ATTACHMENT SCHEDULE

OVERALL ATTACHMENT STYLE

An overall judgment about S's attachment style to the extent that this generalises (or is likely to generalise) across relationships.
Rate overall attachment as either NON-STANDARD or STANDARD using behavioural material. The sub-category should then be determined by dependent,fearful and angry attitudes to others.
Non-standard attachments should be rated as 'marked' or 'moderate' on the particular subcategory. Standard attachments rated as 'some' on these subcategories or 'clearly standard' if none apply.

GUIDE TO RATING SUMMARIES

HIGH: RATING 1 OR 2
LOW: RATING 3 OR 4
( )FEATURE MAY BE PRESENT BUT NOT NECESSARILY

A. PREOCCUPIED/ENMESHED

This encompassess two dependent styles: (a) simple dependence without hostility and (b) ambivalence (dependence and hostility).

B. DISMISSIVE

This attachment style is characterised by avoidance from others, with high self-reliance and anger/ intolerance of others.

C. FEARFUL

This attachment style is also avoidant but characterised by fear of others, social anxiety and fears of being rejected or let down.

D. WITHDRAWN

This is a residual avoidant category which although having features of self-relaince and lack of desire for engagement with others, does not have either fear or intolerance of others.

E. STANDARD

Good ability to make relationships as evidenced by closeness to partner and children or to support figures outside the home. There is unlikely to be extreme attitudes of hostility, dependence or fear.

STYLE	SELF RELNCE	CONSTRAINTS	FEAR OF INTIMACY	FEAR SEX INT	MISTRUST	ANGER	ENGAGEMENT	INTOLSEPTN
A.	LOW	LOW	LOW	LOW	(HIGH)	(HIGH)	HIGH	HIGH
B.	HIGH	HIGH	LOW	LOW	HIGH	HIGH	LOW	LOW
C.	(LOW)	HIGH	HIGH	(HIGH)	(HIGH)	LOW	(LOW)	(LOW)
D.	HIGH	HIGH	LOW	LOW	LOW	LOW	LOW	LOW
E.	HIGH	LOW	LOW	LOW	LOW	LOW	HIGH	LOW

INCONSISTENCY BETWEEN S'S ATTITUDES AND BEHAVIOUR

Rate whether S's reported attitudes and behaviour in relationship appear inconsistent to the interviewer.

	INCONSISTENCY BETWEEN S'S ATTITUDES AND BEHAVIOUR
0	No significant inconsistency
1	Attitudes more 'non-standard' than behaviour
2	Behaviour more 'non-standard' than attitudes
3	Inconsistencies in various directions
	P709

	KEY RELATIONSHIPS REFLECTED IN NON-STANDARD ATTACHMENT RATING
-1	No evidence of non-standard attachment
0.	All/ most relationships reflect non-standard attachment
1.	Partner
2.	Children
3.	Parents
4.	Other kin
5.	Friendships
6.	Outsiders
	P7SOA
	P2NOB
	P3ROC

INCONSISTENCY BETWEEN S'S ATTITUDES AND BEHAVIOUR

Rate whether S's reported attitudes and behaviour in relationship appear inconsistent to the interviewer.

	INCONSISTENCY BETWEEN S'S ATTITUDES AND BEHAVIOUR
0	No significant inconsistency
1	Attitudes more 'non-standard' than behaviour
2	Behaviour more 'non-standard' than attitudes
3	Inconsistencies in various directions
	P709

	KEY RELATIONSHIPS REFLECTED IN NON-STANDARD ATTACHMENT RATING
-1	No evidence of non-standard attachment
0.	All/ most relationships reflect non-standard attachment
1.	Partner
2.	Children
3.	Parents
4.	Other kin
5.	Friendships
6.	Outsiders
	P7S0A
	P2N0B
	P3B0C

ATTACHMENT TRAINING
RATINGS FOR COPING PROJECT 074

MISTRUST OF OTHERS = 2

ATTITUDINAL CONSTRAINTS RE CONFIDING = 2

INSECURITY OF ATTACHMENT = 4

SELF-RELIANCE = 2

OVERALL FEAR OF INTIMACY = 4

FEAR OF SEXUAL INTIMACY = 4

DESIRE FOR ENGAGEMENT/ENMESHMENT = 2

ABILITY TO MAKE AND MAINTAIN RELATIONSHIPS = 3

NON-STANDARD ATTACHMENT (MAIN) = 2 (Moderately preoccupied/enmeshed)
(SUBSIDIARY) = -1

STANDARD ATTACHMENT (MAIN) = -1
(SUBSIDIARY) = -1

INCONSISTENCY BETWEEN ATTITUDES AND BEHAVIOUR = 0

ANGER IN RELATIONSHIPS = 2 high

Attachment Training Thumbnail
Coping Project 074

S is a warm, friendly, 45 year old woman with four children, three from her previous marriage and one from her current marriage. Her current husband, Kelly, is five years younger than S. S's mother died when S was in her twenties, but S's father is still alive. S's eldest children, Nicola, Lee, no longer live at home but have frequent contact with S. S's youngest children, Katie and Tracey, are still living at home. S has negative interaction with the children and also with her husband. S named her father and her sister-in law (Irene) as VCOs, but does not confide to a high degree in her father.

The interview took place with S in bed - she had been released from hospital just a couple of days before interview, following an emergency appendix operation. S was most keen to be interviewed, even though the interviewer suggested that S might want to delay the interview until S was on her feet again. S insisted that the interview should go ahead anyway, with her still ill in bed. At the end of the interview S gave the interviewer a hug and kiss, and said that she would gladly take part in any other interviews required.

The section of transcript starts midway through the demographic section of the interview, and then goes on to cover questions from the SESS regarding social arena and VCOs. Finally, questions from the attachment measure are asked. To cover this amount of material typically takes 15 to 20 minutes, however, with this respondent it took 45 minutes. Hence the interviewer tries to force the pace of the interview, and can be heard, for example, finishing off S's sentences, etc, towards the end of this section of questions.

Q. Did your mum work when you were little?

A. She umm, she was umm a tea lady at Strand Electric, she used to go in at sort of 10 O'clock in the morning, come home lunch time go back. I mean when she died, the flowers and things she got from people who she worked for was absolutely wonderful, they all liked her, but she was very likeable, she had a sense of humour my mum, but she was a cow but she had a sense of humour, she really did and I think that's what people....

Q. That's what they remember?

A. I think... I mean I'm a lot like her in the respect well you either take me for what I am or you don't take me at all, cause I don't believe putting on airs and graces for anyone. Why should you? You are who you are and if people don't like you well tough.

Q. And you think your mum was like that, that's where you get it from?

A. Oh yeah.

Q. Yeah. Umm Can I ask you a bit about your social life and how important do you think it is to have friends, is that important?

A. Oh I think everybody needs friends, yeah definitely. I mean I've got friends at work, one friend in particular, umm we don't socialise outside work I mean she's been here everyday since I've been out of hospital.

Q. Yeah.

A. For an hour, you know in her break time and things like that, we don't really socialise outside work, except if we had things like a linen party or an Ann Summers party things like that, but other than that we don't socialise but...

Q. Is it important to have her there?

A. Oh she's like, I know she's always there for me and I'm always there for her and that's nice, that's nice.

Q. Umm do you think that people find it easy or difficult to get along with you in social situations?

A. I think I am quite easy to get on with.

Q. Do you have time for any sort of hobbies or anything, is there anything you particular like doing or.....?

A. I like reading, I like reading that is my, that is the one thing I won't give up for anybody, I will, I love my bedroom, I will come in I will either sit in that chair or lay on here with my book, my cigarettes my cup of tea and I don't want to be disturbed by anyone, that's my hobby, I think, relaxation on my own, reading.

Q. How do you get on with your brother is that relationship alright?

A. Yeah, I mean he's a little shit personally, he's umm cause he was the baby he was spoilt. He can be very selfish in giving himself but after saying that he is the most terrific little dad two kids could wish to have, he really is a good dad. He takes his kids camping, swimming - for them, but as far as giving himself to his family, he didn't use to be like that, I mean he's married again. Dad said when he broke up with his wife 'oh my god what have me and your mother raised' cause he's had two kids who... and I suppose it must - I might feel like I think, cause you know, was it something that we did. They both had marriages that didn't work, but he was with his first wife sixteen years, so it wasn't as if he give up after umm and he's got, actually he's living with a girl, she's not his wife, he's living with a girl now, he's been living with her for three years, they've just brought their own little flat. And he used to go out with her before he married his first wife, they just met again and, and he's never been as happy because with his first wife she was very artistic, she was an umm art student. He met her, fell for her, got her pregnant when he was 19, they got married - he was much too young and immature he had lost his mum when he was sixteen, and he just well it wasn't right, but, she wants, he was her bit of rough, yeah, and they got married and I gave it six months I said 'that will last six months', you know, but as I say he probably gave her a life of hell, I don't know, but at the same time he did all the cooking, the washing.

Q. The lot, yeah?

A. The cleaning, looking after the kids, cause she was bone idle. The place was like a tip, so whatever way it was six of one and half a dozen of the other like in most, but the girl he has got now Trish, oh she's lovely, she is really, she's a proper family girl, like us. Well, her place, umm she puts me to shame.

Q. You see her, I mean, you talk to her more than your brother?

A. Oh yeah, she's a lovely girl and she sorts him out, but I tell him where I used to say oh my brother's a little git, wouldn't put himself out, now I tell him.

Q. Yeah.

A. Cause I thought, no I'm not holding it back why should I, he's my brother if I can't talk straight to him, who can and I said to him I think you are a selfish little goat, and when you change and decide that you have got a sister you want to see you know where I am, cause I am not bothering you any more.

Q. When did you say all of this to him?

A. Couple of years back, oh the differences, he was on the phone, I said here don't go over the top, twice in a week I can't cope with this, it did him good and we are closer now that we have been for years, cause when he was with her cause I couldn't be bothered with him, cause he couldn't be bother with me. I used to phone, I used to get them to come here, I used to go up there, but it was always me and in the end

I said to my husband, no that's it, I am not doing it any more if he wants me he knows where I am, and I stayed out of the way, even when Katie was born, he never saw my Katie till she was a year old and that hurt, my god that hurt and that's when I told him when I actually saw him I said this might be the last time you ever see her, and he said oh, I said don't give me no rubbish about you are sorry there's nothing stopped you getting on a train, when you wanted to borrow money you were up on a train, I said that this might be the last time you ever see her cause it's down to you now cause I'm finished. I mean that really upset my dad he didn't like me saying things like that, but I said 'I sorry dad, it's got to be said' and since then he is a changed boy I mean I came out of hospital Thursday he was up her on the Friday, which is you know, but its cause I told him the truth, I said 'I love ya but I don't like ya I think you are a shit!' And he went 'oh thanks very much' and I said 'well I'm sorry' and since then....

Q. He's changed his tune?

A. Oh God yeah. Yeah he has.

Q. So if you had a problem of some sort, who would be the first person you discuss it with?

A. Err it depends what sort of problem it was I think.

Q. Is it mostly your sister in law?

A. Umm no I mean if I, you see I try not – if I've got a worry, a real worry see I am terrible I don't show I keep it all in, that's why I got stomach trouble, because I don't, I'm the strong one, nothing bothers me to all and sundries she will cope with anything, but I can't really, but I keep it inside. I won't tell my husband if I've got a real worry cause he lives on his nerves he has got high blood pressure, why he is like it I don't know, but he has always been. I mean he has coped with me running his house he would cope with anything, but he is a worrier.

Q. So you think you hold back on some things?

A. I think I'm not going to tell him that, why worry him.

Q. If there were important things?

A. Oh if it was a really important thing that involved him and he'd have to know then I would tell him.

Q. But otherwise try not to worry him?

A. I think oh know I won't tell him, I mean I would phone Irene and say you never guess what, but I wouldn't tell him why worry him, why put him through it because I know he wouldn't put me through it, if he thought oh she, no there is no need for her to worry about he wouldn't tell me.

Q. What about your sister in law (Irene), do you think you tell her important things or?

A. Oh yeah, yeah.

Q. Have there been things in the past?

A. More things in the past than now cause now I suppose when you get older you don't feel the need as much but I mean when we, Kelly and I were first together and we were having problems which all couples have but I mean he had my three children and the minute he said something to my children, I was....

Q. Mmmm.

A. I knew I shouldn't and I tried not to let the kids see it cause I didn't want him to think one against the... it was very hard I used to say to him 'don't talk to my kids like' that but he used to say 'hang on, but I, like here, I pay the rent, surely I've got some right'. I used to say 'yeah but its not what you say, its how you say it, but then I was on the defence with my kids, so in that way Irene used to, oh I used to pour it all out to her, 'oh I don't think this is going to work', you know 'I can't - I'm not having my kids spoke to like that' and but I mean we have been together all these years and we have survive, my kids are fond of him, they get on well with him, so it was worth sticking it out in the end, probably, maybe if I hadn't had someone to talk to maybe I wouldn't of stuck it out I don't know.

Q. So you found that she was useful, she was helpful?

A. Oh yeah definitely.

Q. She would listen, she would give advice? Is there anyone you feel really close to other than your husband?

A. My kids, err my dad, yeah, I'm very, very - I feel very close to them.

Q. Do you feel close to Irene or is it not that sort of..?

A. Oh yeah, I mean she, had a go at my husband over this hospital business.

Q. Uhh.

A. Because when I went into the operation he didn't know I was going to have an operation, he didn't know I had had to operation cause they said to me 'shall we phone him' and I said 'no don't'. Let him find out when it's all over, why wake him up now and worry him. Umm so all he thought when he left me was he had to come home get Katie and tell the children which was Lee, Nicola and Tracey, 'your mum's in hospital' and that's it, he didn't think I'm not going to tell anyone else he just think he didn't have to tell anyone else, cause when Irene found out through Nicola, she phoned him up and when off alarming, 'you should of bloody told me' and he said 'I didn't do it on purpose'.

Q. He just didn't think?

A. No he didn't think and she was really, I said to her don't be too hard on him, I said he had a little eight year old to think about. He watch

me writhing in pain and all he thought I must tell the children, I said, don't - he didn't do it, it wasn't a malicious thing it was just he didn't think, he didn't even think to tell me brother, he told me kids and he knows that was important to me, that my children know so that's what he did.

Q. You said that you feel close to your dad, is he someone you feel you can talk to or you tend to hold back?

A. Oh no I can't talk to my dad, I mean I could talk to him about every day things.

Q. Ordinary things?

A. But not, oh I couldn't tell him my problems.

Q. You wouldn't worry him with this then?

A. No. I have never had that relationship with my dad.

Q. Has he been able to support you or help you in anyway?

A. Oh I know my dad is always there for me, always I only have to pick up that phone and say dad I need ya and he would be there, that much in my head I know, but I couldn't discuss personal problems with him.

Q. Cause he wouldn't know how to?

A. No he wouldn't know how to react. No he wouldn't.

Q. Where as you would with Irene, she would be the one you'll talk to?

A. Its like if my kids come to me with a personal problems they know they can tell me anything, I make sure of that, that I have got that relationship with my children.

Q. Do you find it easy to discuss problems with people, do you find it easy to confide generally?

A. Depends on who it is. I couldn't just discuss it with just anyone, it had to be someone I am close to, you know.

Q. And do you find it easy to get close to people, or do you feel you are close to people?

A. Yeah I do get, I mean people seem to latch on to me, my husband said you always pick up the waifs and strays and I do if, like, if a new person moves in the block and they have got a problem, normally end up coming to me. He said 'your like a bloody magnet you draw them in, its like my teachers at school, the young girls, they are the same age as my Lee I mean I've got one, Julie, she is a lovely kid and she comes to me with her problems I mean I brought her a hair brush once, I said brush your bleeding hair it looks like a mop and she keeps it in her draw she says look what she brought me my hair is a mess.

Q. So do you feel people come to you and confide in you more than the

other way round you don't..?

A. I would only confide in certain people.

Q. And do you feel that you enjoy meeting people?

A. Yeah I do.

Q. You are quite sociable. How do you feel about being on your own, if you have to be on your own, say if your husband worked him away?

A. Chance would be a fine thing.

Q. You don't mind?

A. Oh no.

Q. You don't consider yourself a loner?

A. No. I wouldn't like it for any length of time, but I'd like some time to myself, I'd love it. I mean when Katie sometimes stays with her little friend from school, who lives up the road, and Kelly's working like he's doing nights, oh I love it. I have this place all to myself, I don't have no telly on, I make myself a cup of tea and I have something to eat, I might stand out on the balcony I may lay in here and listen to music oh I love it.

Q. So you don't mind?

A. Oh no no not at all, I'd like a bit more time on my own.

OTHER COMMENTS MADE SPONTANEOUSLY

'I need to be needed, that is me. If my kids don't phone me or pop up to see me, I feel redundant, I don't like it. I say "Couldn't you pick up the bleedin' phone then?" I need them, then sometimes I think - "Oh won't you go away and leave me alone". So they don't know if they're coming or going!'

Vignettes

Making and Maintaining relationships.

SIS0431 NON-STANDARD 4. 3:1

S is aged 30 and is living with her partner M and two children aged 9 and 2. S does not currently work but she is trying to get into a degree course.

Partner	S has had a history of both being the victim and perpetrator of violence in her relationships. S has had several gay relationships but is presently living with a man, their relationship is poor.
Children	There are some problems with her eldest child who is still bedwetting and is afraid of S because she explodes with him (hitting him).
VCO	S feels close to Michelle but is unable to tell her.
Family of origin	S has frequent feuds with her family, her sister has be forbidden to communicate with S by S's parents.
Other relationships	"I am hopeless at relationships, I always seem to choose the wrong people."

2 COP050 STANDARD

S is a 22 year old single woman living in Islington. S works full-time as a shop assistant.

Partner	N/A
Children	N/A
VCO	S has a lot of friends that she sees at least weekly, she has several confiding VCOs that she has known for at least ten years.
Family of origin	S has a good relationship with her mother whom she sees monthly and whom she confides in to a 2 level. Her father is deceased.
Other relationships	"I enjoy making friendships as long as the other person is just as committed. I have a lot of good friends and friends that are just for going out with. I'd go out every night if I could."

3 COP022 NON-STANDARD 3

S is a 36 year old married woman from Scotland. S and her husband are unemployed. S has two children and one son who died age 12.

Partner	S has a distant relationship with her husband, she can talk to him but only about her son's death. She says she is only staying with him for the sake of the

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ORIGINAL

VCO	S has no VCO or confidants. She has one friend that she talks about work to but she has not seen her for 6 months. S reports that she does not have a social life.
Family of Origin	S's sister lives in America and is S's only living blood relative, they talk on the phone six monthly.
Other relationships	S is very self reliant and likes to keep herself to herself.

6 SIS0991 ST. (2)

S is 32 years old and she lives with her husband of 5 years and their two year old son in Islington.	S lectures part-time at Islington College.
Partner	S has a good relationship with her partner, she feels able to confide in him. They have some sexual problems which they have discussed and tried to come to terms with. S feels he loves her more than she loves him.
Children	S has a good relationship with her child although she is very protective of him and is anxious often for his safety.
VCO	S has several confiding VCO's that she see's at least weekly. Most of S's friends are born again christians, like herself, she remarked that they are the ones that understand her the most.
Family of Origin	Both S's parents have died and S's only living relative is her sister who S feels distant towards, despite the sisters effort to bring them together. "I just don't feel I need her as much as she feels she needs me." When the sisters meet it normally ends in a row over S's indifference.
Other Relationships	"I don't make that much of an effort when I meet new people now, I feel I don't need anyone else."

7 SIS0901 ST. (2)

S is 30 years old and she lives with her cohabitee of 5 years. S has several VCO's that she sees weekly. S works for BBC production.	
Partner	S's cohabitee had a one night stand 2 years ago that has resulted in a pregnancy. S has decided to forgive him but clearly this has caused some difficulties between them. S can confide in him about everything and they discuss her feelings about the baby, she feels he gives her plenty of support. There is still some distrust and anger from her towards him, but she said "I still love him and want to marry him despite this. "

Full Attachmnent Scales

N.S. FEMALE.

SIS072(1)

S is aged 38 yrs and she lives alone with her 3 yr old daughter. S is not working. Her partner left her 6 months ago.

Mistrust of others

"I mistrust most people. I think most people put on a fake front when you meet them. I like them to prove they are a friend before I accept them as a friend. I hate people that come over too forward or friendly, I automatically back off away, I've done that most of my life. I have taken people at face value and a lot have let me down, the older I get the more wary I am. It takes a lot for me to gain trust. If people are coming over all friendly I think why are they doing this, they can't like me that much, can they?"

Attitudinal Constraints

S finds it hard to get close to people "because I have all these barriers, I can't open up and expose myself,know it is my fault". S does not confide in anyone. S finds it difficult to ask for help because "I think I should sort out my own problems, I don't like to ask for help in case they refuse it."

Fear of intimacy

S does feel uncomfortable at self disclosure and she feels she must protect herself from getting too close to people in case they let her down. S backs off if she feels people are too friendly.

Self Reliance

I do like my own company. S likes to feel she has control over her life and if things go wrong she often blames herself. She would not call herself a loner because she would like some more company.

Lack of tolerance of separation

Do you get anxious when people you are close to are away? "I used to, the baby is the only one I am close to and I do feel anxious when she is away from me. I hate saying goodbye and I always promise to keep in touch and I know really that I wont".

Engagement and Enmeshment

S does not confide in anyone. S sees her friends weekly and does not express a desire to see them more,

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ORIGINAL

Text cut off in original

~~Self reliance~~

"I have always been quite independent and I want to be able to do things on my own with minimum amount of help from other people".
Would you ever describe yourself as a loner?
"Yes, I am comfortable with my own company."
Do you depend on anyone for emotional support?
"I suppose I depend on D for practical help but really if I have got a problem I usually try and work it through with myself rather than discussing it with other people, I try to work it out myself."

Lack of tolerance of separation.

If D or Claire goes away does that make you feel anxious?
"I don't feel anything really. I always feel that I can cope, I feel alright with my own company, so it does not worry me."

S's desire for engagement/enmeshment in relationships.

"I usually try to deal with my problems myself, I usually try and sort of keep it to myself and work through it. S does not need to see her friends often and is not possessive about them."

Anger.

"Not angry I would say that I was quite placid I certainly don't direct my anger to anyone."

Interviewer assessment of S's ability to make and maintain relationships.

Partner	S has cohabited with D for 2 years, their quality of relationship is rated a 5 (poor/average some indifference). They both go out separately and have separate friends and hobbies. S relies on Derek for practical help but rarely confides. There is no real hostility in the relationship.
Children	N/A
VCO	S has one main friend who she sees twice weekly, she feels close to her but does not confide unless she can't resolve her problem herself.
Family of origin	S has no antipathy to parents but she is not close to them either. On average she sees them once a month.
Other Relationships	S has no friends at work but no hostile relationships either.

S's desire for engagement and enmeshment in relationships.

Do you open up too soon in a relationship? "Yes, I get close to people too quick".
Do you ever confide and then regret it later? "Yes. It's things like the child abuse thing and rape thing, I tend to tell people that. I do think everybody should..I am sick of the whole thing. It's all a cover up job and women are encouraged not to say things like that".
Do you like to have a lot of contact with people you are close to? "Yes, I like to have company, I like to see my friends daily, to keep that contact up. I do like things to be revolved around me. I am a little upset with my daughter because she goes out to the pub with her Aunt and they would never dream of inviting me, I find that really hurtful."

Anger

S is angry with her daughter for not wanting to get closer to her and they argue over this. S also argues with her boyfriend because she feels he should be more attentive to her. " I tend to hurt the people I love the most, by arguing with them."

Interviewer's assessment of S's ability to make and maintain relationships

Partner	S is very dependant on partner emotionally, she is also highly anxious if he is later than expected. They have frequent rows often started by S.
Children	S feels the need to been seen as a friend to her daughter and does not understand why this is not possible. Their relationship is tense, S feels her daughter does not give enough to it.
VCO	S sees her VCO daily and she confides everything to her. S has felt possessive of their relationship when her friend started a dating relationship.
Family of Origin	S is very close to her Mother who she visits daily. They fell out for a month after S lost her temper with her mother.
Other Relationships	S finds it easy to make friends but harder to maintain relationships because she tend to scare people off.

SIS41(2) MARKEDLY DISTINCTIVE

S is aged 29 and she lives with her cohabitee and their two year old daughter. S has been working as a doctors receptionist for the last 2 years.

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ORIGINAL

VCO	S has one main VCO who she sees weekly, S will confide work difficulties but little else. S reports that they often row.
Family of origin.	There is a lot of hostility to her father and brothers because of her bad childhood. S sees her mother monthly but she does not feel particularly close.
Other Relationships	S is not popular at work " I don't get on with people, whether its the way I talk, maybe I am arrogant, when I am right, I am right. I come across as indifferent and argumentive "I don't get on with people very well, maybe because I'm outspoken. I speak out and say what I have to say".

Attachment COP067 HARMLESSLY FEARFUL.

S is aged 27 and she is living with her 50 year old boyfriend and their two year old son.

Mistrust of others

Re friend M.F.: "Yeah I quite like her but I find it very hard to trust people 100%. I trust her 65% which is a lot for me."
"A lot of the time I feel under threat."

"I even find it hard to trust the child." "Anything that I ever really wanted was taken away from me. So I distance myself from the child."

"In this life you can't really trust anyone 100%. You could be married to someone and you mightn't know them. You can't allow yourself."

Attitudinal constraints re primary/confiding relationships

"I only confide in people who are not close to me. I don't confide in people who are very close because I'm afraid that they might have a different opinion of you."
(Tell anyone about terminations) "Nu-uh. I told my doctor once."
"It's very hard to love something wholeheartedly when the hearts been taken out of you for quite a few years."

Lack of tolerance of separation

"If I didn't see him for a week it wouldn't bother me." [boyfriend]

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J Edmond

Attachment Cop069

S is a 30 year old woman living with her second husband and her 12 year old and 15 year old sons from her first marriage. S does not work.

Mistrust of others

(Easy to trust people) "People um... people I know or strangers?"
(People you're getting to know) "Yeah I would trust them."

Attitudinal constraints

(Easy to talk to people about the way that you feel) "No not just anybody."
(Enjoy meeting new people) "It doesn't bother me really."

Lack of tolerance of separation

(Get anxious when your husband is away) "No"

Self reliance

(Is it important to have people around you a lot of the time so that you're not alone) "No. I can be okay on my own. I like it sometimes on my own."
(Do you like a balance) "Mmmm"
(Are you a bit of a loner) "No"
(Feel you can cope on your own) "Oh yeah"
(When you were a single parent do you feel you coped well on your own) "I coped very very well, in every way."

Fear of intimacy

(Hard or easy to get close to people)
"I would say easy"

S's desire for engagement/ enmeshment in relationships

(Is having people close to you important) "No. Just my children and my husband"
(Important to have them around you) "Not so much around me but to be close to them."
(So not that important to spend a large amount of time with people) "Now it is, just my husband, yeah"

Anger

S has some resentment towards her brother.
S's son announced that he wanted to go to his fathers for half term, S felt "Very disappointed and hurt, stabbed in the back."
S feels no hostility to her current husband.

Appendix F

The Golombok Rust Inventory of Marital State (GRIMS: Rust et al., 1988)

G.R.I.M.S.

FEMALE PARTNER

Name ..... Date .....

Instructions: Each of the statements 1 to 28 below is followed by a series of possible responses - SD = Strongly Disagree, D = Disagree, A = Agree and SA = Strongly Agree. Read each statement carefully and decide which response best describes how you feel about the relationship with your partner. Then put a tick over the corresponding response. PLEASE RESPOND TO EVERY STATEMENT. If you are not completely sure which response is most accurate, put the response which you feel is most appropriate. Do not spend too long on each statement.

Please answer this questionnaire without discussing any of the statements with your partner. In order for us to obtain valid information it is important for you to answer each question as honestly and accurately as possible. ALL THE INFORMATION WILL BE TREATED WITH THE STRICTEST CONFIDENCE.

G.R.I.M.S

		Strongly Disagree	Disagree	Agree	Strongly Agree
1.	My partner is usually sensitive to and aware of my needs	SD	D	A	SA
2.	I really appreciate my partner's sense of humour	SD	D	A	SA
3.	My partner doesn't seem to listen to me any more	SD	D	A	SA
4.	My partner has never been disloyal to me	SD	D	A	SA
5.	I would be willing to give up my friends if it meant saving our relationship	SD	D	A	SA
6.	I am dissatisfied with our relationship	SD	D	A	SA
7.	I wish my partner was not so lazy and didn't keep putting things off	SD	D	A	SA
8.	I sometimes feel lonely even when I am with my partner	SD	D	A	SA
9.	If my partner left me life would not be worth living	SD	D	A	SA
10.	We can "agree to disagree" with each other	SD	D	A	SA
11.	It is useless carrying on with a marriage beyond a certain point	SD	D	A	SA
12.	We both seem to like the same things	SD	D	A	SA
13.	I find it difficult to show my partner that I am feeling affectionate	SD	D	A	SA
14.	I never have second thoughts about our relationship	SD	D	A	SA
15.	I enjoy just sitting and talking with my partner	SD	D	A	SA
16.	I find the idea of spending the rest of my life with my partner rather boring	SD	D	A	SA
17.	There is always plenty of "give and take" in our relationship	SD	D	A	SA
18.	We become competitive when we have to make decisions	SD	D	A	SA
19.	I no longer feel I can really trust my partner	SD	D	A	SA
20.	Our relationship is still full of joy and excitment	SD	D	A	SA
21.	One of us is continually talking and the other is usually silent	SD	D	A	SA
22.	Our relationship is continually evolving	SD	D	A	SA
23.	Marriage is really more about security and money than about love	SD	D	A	SA
24.	I wish there was more warmth and affection between us	SD	D	A	SA
25.	I am totally committed to my relationship with my partner	SD	D	A	SA
26.	Our relationship is sometimes strained because my partner is always correcting me	SD	D	A	SA
27.	I suspect we may be on the brink of separation	SD	D	A	SA
28.	We can always make up quickly after an argument	SD	D	A	SA

Appendix G

The General Health Questionnaire (GHQ; Goldberg, 1972)

TEXT BOUND INTO

THE SPINE

GENERAL HEALTH QUESTIONNAIRE

:e read this carefully:

We should like to know if you have had any medical complaints, and how your health :een in general, over the past few weeks. Please answer ALL the questions on the :wing pages simply by underlining the answer which you think most nearly applies to you :mber that we want to know about present and recent complaints, not those that you hac :e past.

It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

E YOU RECENTLY:-

been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
been having restless, disturbed nights?	Not at all	No more than usual	Rather more than usual	Much more than usual
been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
been getting out of the house as much as usual?	More so than usual	Same as usual	Less than usual	Much less than usual
been managing as well as most people would in your shoes?	Better than most	About the same	Rather less well	Much less well
fel: on the whole you were doing things well?	Better than usual	About the same	Less well than usual	Much less well
been satisfied with the way you've carried out your task?	More satisfied	About same as usual	Less satisfied than usual	Much less satisfied
been able to feel warmth and affection for those near to you?	Better than usual	About same as usual	Less well than usual	Much less well
been finding it easy to get on with other people?	Better than usual	About same as usual	Less well than usual	Much less well
spent much time chatting with people?	More time than usual	About same as usual	Less time than usual	Much less than usual
felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
felt you couldn't overcome your difficulties?	Not at all	Mo more than usual	Rather more than usual	Much more than usual
been finding life a struggle all the time?	Not at all	No more than usual	Rather more than usual	Much more than usual
been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual

Please turn over

OU RECENTLY:-

een taking things hard?	Not at all	No more than usual	Rather more than usual	Much more than usual
een getting scared or anicky for no good eason	Not at all	No more than usual	Rather more than usual	Much more than usual
een able to face up to our problems?	More so than usual	Same as usual	Less able than usual	Much less able
ound everything getting on p of you?	Not at all	No more than usual	Rather more than usual	Much more than usual
een feeling unhappy and pressed	Not at all	No more than usual	Rather more than usual	Much more than usual
een losing confidence in ourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
een thinking of yourself s a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
lt that life is ntirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
een feeling hopeful bout your own future?	More so than usual	About same as usual	Less so than usual	Much less hopeful
een feeling reasonably appy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual
een feeling nervous and trung-up all the time?	Not at all	No more than usual	Rather more than usual	Much more than usual
lt that life isn't orth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
ound at times you couldn't anything because your rves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual

Appendix H

The Personality Diagnostic Questionnaire (SCID-II-PQ).

The Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck, 1975).

SCID-II QUESTIONNAIRE

(to be used with SCID-II, Version 1.0)

Initials: _ _ _

Today's Date: _ _ / _ _ / _ _
Mo. Day Year

17
1-2

Subj # _ _ _ _
3 4 5 6

ID # _ _ _ _
7 8 9 10

11-15 b

(TO BE COMPLETED BY STUDY STAFF)

Form No. 05
79-80

Punch: Duplicate on all cards.

INSTRUCTIONS

These questions are about the kind of person you generally are, that is, how you usually have felt or behaved over the past several years. Circle "Yes" or "No." If you do not understand a question, leave it blank.

1.	Are your feelings more easily hurt than most people's if someone criticizes you or disapproves of something you say or do?	NO YES	1
2.	Are there very few people that you are really close to outside of your immediate family?	NO YES	2
3.	Do you avoid getting involved with people unless you are certain they will like you?	NO YES	3
4.	Do you avoid social situations in which you might have to talk with other people?	NO YES	4
5.	Have you avoided jobs or assignments that involved having to deal with a lot of people?	NO YES	5
6.	Are you often quiet in social situations because you're afraid of saying the wrong thing?	NO YES	6
7.	Have you often been afraid that you might look nervous or tense, or might cry or blush in front of other people?	NO YES	7
8.	Do a lot of things seem dangerous or difficult to you that do not seem that way to most people?	NO YES	8
9.	Do you need a lot of advice or reassurance from others before you can make everyday decisions?	NO YES	9
10.	Have you allowed other people to make very important decisions for you?	NO YES	10
11.	Do you often agree with people even when you think they are wrong?	NO YES	11
12.	Do you find it hard to start or work on tasks when there is no one to help you?	NO YES	12
13.	Have you often done unpleasant or demeaning things to get other people to like you?	NO YES	13
14.	Do you generally prefer *not* to be by yourself?	NO YES	14
15.	Do you often do things to avoid being alone?	NO YES	15
16.	Have you ever felt helpless or devastated when a close relationship ended?	NO YES	16
17.	Do you worry a lot about people that you care about leaving you?	NO YES	17
18.	Do you have trouble finishing jobs because you spend so much time trying to get things exactly right?	NO YES	18
19.	Are you the kind of person who focuses on details, order, and organization, or who likes to make lists and schedules?	NO YES	19
20.	Do you sometimes insist that other people do things exactly the way you want?	NO YES	20
21.	Do you sometimes do things yourself because you know that no one else will do them exactly right?	NO YES	21
22.	Are you, or does your family feel that you are, so devoted to work (or school) that you have no time left for other people or for just having fun?	NO YES	22

Do you sometimes have trouble making decisions because you can't make up your mind about what to do or how to do it?	NO	YES	23
Do you have higher standards than most people about what is right and what is wrong?	NO	YES	24
Do you often get angry at other people for breaking rules?	NO	YES	25
Have people complained that you are not affectionate enough?	NO	YES	26
Do you rarely give presents, volunteer time, or do favors for other people?	NO	YES	27
Do you have trouble throwing things out because they might come in handy some day?	NO	YES	28
Do you often put off doing things that people ask you to do until the last minute?	NO	YES	29
Are you the kind of person who gets irritable or sulky if someone asks you to do something you don't want to do?	NO	YES	30
Are you the kind of person who works very slowly or who does a bad job when asked to do something that you really don't want to do?	NO	YES	31
Do people often make unreasonable demands on you?	NO	YES	32
Do you tend to "forget" to do things you are supposed to do if you really don't want to do them?	NO	YES	33
Do you often think you're doing a better job than others give you credit for?	NO	YES	34
Does it annoy you when people make suggestions about how you could get more work done?	NO	YES	35
Have people complained that you were holding them up by not doing your share of a job?	NO	YES	36
Do you often find that the people who are in charge of things (such as your boss or teachers) do not deserve your respect?	NO	YES	37
Have you chosen a friend or lover who has taken advantage of you or let you down?	NO	YES	38
Have you sometimes gotten into bad situations at work or at school where you wound up being taken advantage of?	NO	YES	39
Do you often refuse help from other people because you don't want to bother them?	NO	YES	40
When people try to help you, do you make it hard for them?	NO	YES	41
When you are successful, do you feel depressed or like you don't deserve it, or do you do something to spoil the success?	NO	YES	42
Do you often say or do things that make other people upset or angry with you?	NO	YES	43
Do you often turn down the chance to do things that you really enjoy?	NO	YES	44
Do you sometimes *not* admit to others that you had a good time?	NO	YES	45
Have you *not* accomplished many of the personal goals that you have set for yourself?	NO	YES	46
Are you not interested in, or even bored with, people who are nice to you?	NO	YES	47
Do you almost always do what is good for other people rather than what is good for you?	NO	YES	48

49.	Do you do things for other people even when they don't want you to or try to discourage you?	NO	YES	49
50.	Do you often have to keep an eye out to stop people from using you or hurting you?	NO	YES	50
51.	Are you sometimes not sure whether you can trust your friends or the people you work with?	NO	YES	51
52.	Do you often pick up hidden meanings in what people say or do?	NO	YES	52
53.	Are you the kind of person who holds grudges or takes a long time to forgive people who have insulted or slighted you?	NO	YES	53
54.	Do you find it is best not to let other people know too much about you?	NO	YES	54
55.	Do you often get angry because someone has slighted you or insulted you in some way?	NO	YES	55
56.	Have you suspected that your spouse or partner has been unfaithful?	NO	YES	56
57.	When you see people talking, do you often wonder if they are talking about you?	NO	YES	57
58.	Have you often felt that the way things were arranged had a special significance for you?	NO	YES	58
59.	Do you often feel nervous in a group of more than two or three people you don't know?	NO	YES	59
60.	Have you ever felt that you could make things happen just by making a wish or thinking about *them?*	NO	YES	60
61.	Have you had experiences with the supernatural, astrology, seeing the future, UFO's, ESP, or a personal experience with a "sixth sense"?	NO	YES	61
62.	Do you often mistake objects or shadows for people, or noises for voices?	NO	YES	62
63.	Have you had the sense that some person or force is around you, even though you cannot see anyone?	NO	YES	63
64.	Have you had the experience of looking at a person or yourself in the mirror and seeing the face change right before your eyes?	NO	YES	64
65.	Do you *not* need close relationships with other people, like family or friends?	NO	YES	65

66-78b

18 duplicate b
1-2 3-14 15

66.	Would you rather do things alone than with other people?	NO	YES	16
67.	Do you never seem to have really strong feelings, like being very angry or very happy?	NO	YES	17
68.	Could you be content without being sexually involved with another person?	NO	YES	18
69.	Do you *not* care much about what people think of you?	NO	YES	19
70.	Do you often go out of your way to get people to praise you?	NO	YES	20
71.	Do you flirt a lot?	NO	YES	21

21. Do you often dress in a sexy way even when you are going to work or doing errands?	NO	YES	22
22. Does it bother you more than most people if you don't look attractive?	NO	YES	23
23. Are you very open with your emotions, for example, hugging people when you greet them or crying easily?	NO	YES	24
24. Do you like to be the center of attention?	NO	YES	25
25. Are you the kind of person who can't wait to get what you want if you really want it?	NO	YES	26
26. When you're criticized, do you often feel very angry, ashamed, or put down, even hours or days later?	NO	YES	27
27. Have you sometimes had to use other people to get what you wanted?	NO	YES	28
28. Do you sometimes "sweet talk" people just to get what you want out of them?	NO	YES	29
29. Do you feel you are a person with special talents or abilities?	NO	YES	30
30. Have people told you that you have too high an opinion of yourself?	NO	YES	31
31. When you have a problem, do you almost always insist on seeing the top person?	NO	YES	32
32. Do you often daydream about achieving great things or being famous?	NO	YES	33
33. Do you often daydream about having a "perfect" romance?	NO	YES	34
34. Do you think that it's not necessary to follow certain rules or social conventions when they get in your way?	NO	YES	35
35. Is it very important to you that people pay attention to you or admire you in some way?	NO	YES	36
36. Have people said that you are not sympathetic or understanding about their problems?	NO	YES	37
37. Are you often envious of other people?	NO	YES	38
38. Do your relationships with people you really care about have lots of ups and downs?	NO	YES	39
39. Have you often done things impulsively?	NO	YES	40
40. Are you a "moody" person?	NO	YES	41
41. Do you often have temper outbursts or get so angry that you lose control?	NO	YES	42
42. Do you hit people or throw things when you get angry?	NO	YES	43
43. Do even little things get you very angry?	NO	YES	44
44. Have you tried to hurt or kill yourself or threatened to do so?	NO	YES	45
45. Are you different with different people or in different situations so that you sometimes don't know who you really are?	NO	YES	46
46. Are you often confused about your long-term goals or career plans?	NO	YES	47
47. Do you often change your mind about the types of friends or lovers you want?	NO	YES	48

49.	Are you often not sure about what your real values are?	NO YES	49
50.	Do you often feel bored or empty inside?	NO YES	50
51.	Have you often become frantic when you thought that someone you really cared about was going to leave you?	NO YES	51

THE FOLLOWING QUESTIONS ARE ABOUT THINGS YOU MAY HAVE DONE BEFORE YOU WERE FIFTEEN.

52.	Did you often skip school?	NO YES	52
53.	Did you ever run away from home and stay out overnight?	NO YES	53
54.	Did you start fights?	NO YES	54
55.	Did you ever use a weapon in a fight?	NO YES	55
56.	Did you ever force someone to have sex with you?	NO YES	56
57.	Did you ever hurt an animal on purpose?	NO YES	57
58.	Did you ever hurt another person on purpose (other than in a fight)?	NO YES	58
59.	Did you deliberately damage things that weren't yours?	NO YES	59
60.	Did you set fires?	NO YES	60
61.	Did you lie a lot?	NO YES	61
62.	Did you ever steal things?	NO YES	62
63.	Did you ever rob or mug someone?	NO YES	63

E.P.Q. (Adult)

Occupation .....

Age ..... Sex .....

INSTRUCTIONS Please answer each question by putting a circle around the "YES" or the "NO" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

PLEASE REMEMBER TO ANSWER EACH QUESTION

Do you have many different hobbies?	YES	NO
Do you stop to think things over before doing anything?	YES	NO
Does your mood often go up and down?	YES	NO
Have you ever taken the praise for something you knew someone else had really done?	YES	NO
Are you a talkative person?	YES	NO
Would being in debt worry you?	YES	NO
Do you ever feel "just miserable" for no reason?	YES	NO
Were you ever greedy by helping yourself to more than your share of anything?	YES	NO
Do you lock up your house carefully at night?	YES	NO
Are you rather lively?	YES	NO
Would it upset you a lot to see a child or an animal suffer?	YES	NO
Do you often worry about things you should not have done or said?	YES	NO
If you say you will do something, do you always keep your promise no matter how inconvenient it might be?	YES	NO
Can you usually let yourself go and enjoy yourself at a lively party?	YES	NO
Are you an irritable person?	YES	NO
Have you ever blamed someone for doing something you knew was really your fault?	YES	NO
Do you enjoy meeting new people?	YES	NO
Do you believe insurance schemes are a good idea?	YES	NO
Are your feelings easily hurt?	YES	NO
Are *all* your habits good and desirable ones?	YES	NO

PLEASE TURN OVER

Do you tend to keep in the background on social occasions?..... YES NO

Would you take drugs which may have strange or dangerous effects?..... YES NO

Do you often feel "fed-up"?..... YES NO

Have you ever taken anything (even a pin or button) that belonged to someone else?..... YES NO

Do you like going out a lot?..... YES NO

Do you enjoy hurting people you love?..... YES NO

Are you often troubled about feelings of guilt?..... YES NO

Do you sometimes talk about things you know nothing about?..... YES NO

Do you prefer reading to meeting people?..... YES NO

Do you have enemies who want to harm you?..... YES NO

Would you call yourself a nervous person?..... YES NO

Do you have many friends?..... YES NO

Do you enjoy practical jokes that can sometimes really hurt people?..... YES NO

Are you a worrier?..... YES NO

As a child did you do as you were told immediately and without grumbling?..... YES NO

Would you call yourself happy-go-lucky?..... YES NO

Do good manners and cleanliness matter much to you?..... YES NO

Do you worry about awful things that might happen?..... YES NO

Have you ever broken or lost something belonging to someone else?..... YES NO

Do you usually take the initiative in making new friends?..... YES NO

Would you call yourself tense or "highly-strung"?..... YES NO

Are you mostly quiet when you are with other people?..... YES NO

Do you think marriage is old-fashioned and should be done away with?..... YES NO

Do you sometimes boast a little?..... YES NO

Can you easily get some life into a rather dull party?..... YES NO

Do people who drive carefully annoy you?..... YES NO

Do you worry about your health?..... YES NO

Have you ever said anything bad or nasty about anyone?..... YES NO

Do you like telling jokes and funny stories to your friends?..... YES NO

Do most things taste the same to you?..... YES NO

As a child were you ever cheeky to your parents?..... YES NO

Do you like mixing with people?..... YES NO

Does it worry you if you know there are mistakes in your work?..... YES NO

Do you suffer from sleeplessness?..... YES NO

Do you always wash before a meal?.....YES NO
Do you nearly always have a "ready answer" when people talk to you?.....YES NO
Do you like to arrive at appointments in plenty of time?.....YES NO
Have you often felt listless and tired for no reason?.....YES NO
Have you ever cheated at a game?.....YES NO
Do you like doing things in which you have to act quickly?.....YES NO
Is (or was) your mother a good woman?.....YES NO
Do you often feel life is very dull?.....YES NO
Have you ever taken advantage of someone?.....YES NO
Do you often take on more activities than you have time for?.....YES NO
Are there several people who keep trying to avoid you?.....YES NO
Do you worry a lot about your looks?.....YES NO
Do you think people spend too much time safeguarding their future with savings and insurances?.....YES NO
Have you ever wished that you were dead?.....YES NO
Would you dodge paying taxes if you were sure you could never be found out?....YES NO
Can you get a party going?.....YES NO
Do you try not to be rude to people?.....YES NO
Do you worry too long after an embarrassing experience?.....YES NO
Have you ever insisted on having your own way?.....YES NO
When you catch a train do you often arrive at the last minute?.....YES NO
Do you suffer from "nerves"?.....YES NO
Do your friendships break up easily without it being your fault?.....*YES* *NO*
Do you often feel lonely?.....YES NO
Do you always practice what you preach?.....YES NO
Do you sometimes like teasing animals?.....YES NO
Are you easily hurt when people find fault with you or the work you do?.....YES NO
Have you ever been late for an appointment or work?.....YES NO
Do you like plenty of bustle and excitement around you?.....YES NO
Would you like other people to be afraid of you?.....YES NO
Are you sometimes bubbling over with energy and sometimes very sluggish?.....YES NO
Do you sometimes put off until tomorrow what you ought to do today?.....YES NO
Do other people think of you as being very lively?.....YES NO
Do people tell you a lot of lies?.....YES NO
Are you touchy about some things?.....YES NO
Are you always willing to admit it when you have made a mistake?.....YES NO
Would you feel very sorry for an animal caught in a trap?.....YES NO

PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL THE QUESTIONS

Appendix I

The Socio-Demographic and Obstetric Questionnaire (Clare and Cairns, 1978; Kumar and Robson, 1984) a .

The Socio-Demographic and Obstetric Questionnaire (Clare and Cairns, 1978; Kumar and Robson, 1984) b .

Personal history questionnaire (")

Patient's Research No.....

GP : Name.....
Address.....
Phone No.....

Date of interview.....

Address.....

Phone No.....

Age.....

Occupation.....

Nationality and Ethnic origin.....

Education.....

Your home is: 0 Detached or semi detached or terrace house
1 Flat/Maisonette
2 Bedsit/bed and breakfast
3 other.....

Are there any problems with your accommodation?
0 no problems
1 minor problems
2 marked problems
3 major problems

Marital status:
0 single
1 cohabiting
2 married
3 widowed
4 divorced
5 separated
6 other.....

Partner's Occupation(if applicable).....

Is your partner employed(if applicable)?
0 unemployed
1 employed part-time
2 employed full-time
3 other.....

Previous pregnancies:

How many other children do you have?.....

Have you had any miscarriages(note number)?.....

Have you had any terminations(note number)?.....

Are there any other children in your home(note number)?.....

About this pregnancy:

Health of mother:

Have you had any problems with your health this pregnancy?.....

If yes, What kind of problem?

Excessive nausea
Threatened miscarriage
Hospital treatment(out patients)
Hospital treatment(in patients)
Special tests
Other.....

Summary of mother's health this pregnancy:

0 no difficulties
1 minor difficulties
2 marked difficulties
3 severe difficulties

Are you taking any prescribed medication?.....which one?.....

During this pregnancy have you been taking any non prescribed drugs?.....
which one(s)?

0 analgesics
1 Cannabis
2 Narcotics
3 other.....

Do you drink alcohol?.....

How much(pints of beer, glasses of wine) do you drink in a week?.....

Have you modified your drinking habits in relation with your pregnancy?.....
how?

0 Stopped drinking since learning of pregnancy
1 almost complete abstention
2 a bit less than before

If you stopped drinking alcohol after you became pregnant, when did you do so?

0 *1st trimester*
1 2nd trimester
2 3rd trimester

Have you continued smoking?

0 I did not smoke even before pregnancy
1 I stopped smoking since learning of pregnancy
2 I reduced smoking to less than five cigarettes p/day
3 I continued to smoke

If you still smoke, how many cigarettes do you smoke daily?

0 1-4
1 5-20
2 over 21

If you stopped smoking after you became pregnant,when did you do so?

0 1st trimester
1 2nd trimester
2 3rd trimester

Does your partner or anybody else smoke in your house ?

0 no
1 yes,partner.
2 yes,other .....

If you smoke, how old were you when you started smoking?.....

How many cigarettes were you used to smoke before becoming pregnant?

0 1-4
1 5-20
2 over 21.

Are you still working?

0 no
1 yes ,part-time
2 yes ,full-time

When did you stop working?

0 was not working before pregnancy
1 during 1st trimester
2 during 2nd trimester
3 during 3rd trimester

In relation to this pregnancy, had you been trying to become pregnant?

0 no
1 Not particularly
2 yes

If trying, did you have any particular difficulty to get it?

0 no
1 yes , but no medical treatment was necessary
2 yes, we required tests and medical treatment(please note).....
.....

Were you pleased when you became pregnant?

0 pleased
1 Didn't mind
2 not pleased

Was your partner pleased?

0 pleased
1 didn't mind
2 not pleased
3 don't know

Did you at any time think seriously of not going through with the pregnancy(contemplated termination)?

0 no
1 yes

<u>Current state</u>

When did you start prenatal care ?(GP or hospital)

0 1st trimester
1 2nd trimester
2 3rd trimester

Does the baby feel like a person yet?

0 no
1 not sure
2 yes

Have you given the baby a name of any sort?(Include "private" names)

0 no
1 yes

Have you made any preparations for the baby,eg. clothes, cot?

0 none
1 some
2 lots

Do you want a boy or girl?

0 boy
1 girl
2 don't mind

Does your partner want a boy or girl?

0 boy
1 girl
2 he doesn't mind
3 I don't know

If you already know the sex of your baby ,how do you feel about it?

0 pleased
1 don't mind
2 disappointed

Have you had any special test to check your baby's health?

0 none
1 amniocentesis
2 Chorionic villus biopsy
3 Rh incompatibility
4 other.....
5 don't know

Are you planning on breastfeeding?

0 No
1 Maybe
2 Yes

<u>Early childhood and personal history antecedents</u>

Were you healthy during your childhood(up to eleventh birthday)?

0 No,often ill
1 Reasonably healthy, no major illnesses
2 Yes , very healthy
3 don't know

What was your home like when you were a child?
(probes: were there money problems, how did your parents get along , were there arguments , was there any violence , were you mostly happy or miserable).

Emotional security	0 very insecure	Physical security	0 very insecure
	1 markedly insecure		1 markedly insecure
	2 reasonably secure		2 reasonably secure
	3 very secure		3 very secure
	4 don't remember		4 don't remember

Did your parents have religious beliefs?

0 No, not at all
1 Observed the rituals but religion was not important in the home
2 Yes, fairly strong. Parents involved the children in church life and / or religious beliefs were important aspect of home life
3 Yes, very strong .Religious beliefs were rigorously held and observed.
4 don't remember

Do you, yourself, have any religious beliefs?

0 No, not at all
1 Observe the rituals but religion is not important.
2 Yes, fairly strong.
3 Yes, very strong.

When you were a child did anyone ever deliberately hurt you physically?Was anybody violent with you?Were you physically harmed?

0 No, not subject to any deliberate physical violence apart from the usual parental discipline(occasional smacks).
1 Yes, occasionally received intentional and violent hurt.
2 Yes, often received intentional and violent hurt.
3 don't remember.

When you were a child did anybody ever touch you? In a sexual way? Were you ever interfered with? (Probe for any sexual contact, eg. for exposure, masturbation in front of ,or with, or actual sex.)

0 No
1 Yes, isolated incidents of exposure or masturbation, no actual contact.
2 Yes, incidents of exposure or masturbation over continuous period.
3 Yes, actual contact ,interfered with,attempted sex but only iso lated incidents.
4 Yes, actual contact, interfered with, over a continuous period
5 Don't remember.

Were you separated from either of your parents for a month or more before you were eleven?

Mother		Father	
	0 No		0 No
	1 Yes		1 Yes
	3 don't know.		2 don't know

How old were you when this happened?.....

For how long were you separated?

0 less than 2 months.
1 between 2 months and one year.
2 more than a year.
3 Don't remember.

Why were you separated?

0 Parents death
1 parents illness
2 childs illness
3 Parental separation
4 Taken into care
5 Other.....
6 don't know.

Who looked after you then?

0 Other parent
1 Relatives
2 In care
3 Foster parents
4 Adopted
5 Other.....
6 Don't know.

Personal history questionnaire (4b)

Patient's Research No.....

GP : Name.....
Address.....
Phone No.....

Date of interview.....

Address.....

Phone No.....

Age.....

Occupation.....

Nationality and Ethnic origin.....

Education(Academic qualifications):

0 none
1 "o" levels
2 "A" levels
3 Diploma
4 Degree
5 postgraduate

Your home is: 0 Detached or semi detached or terrace house
1 Flat/Maisonette
2 Bedsit/bed and breakfast
3 other.....

Are there any problems with your accommodation?

0 no problems
1 minor problems
2 marked problems
3 major problems

Marital status:

0 single
1 cohabiting
2 married
3 widowed
4 divorced
5 separated
6 other.....

Is your partner employed(if applicable)?

0 unemployed
1 employed part-time
2 employed full-time
3 other.....

Partner's Occupation(if applicable).....

<u>Previous pregnancies:</u>

How many other children do you have?.....

Have you had any miscarriages(note number)?.....

Have you had any terminations(note number)?.....

Are there any other children in your home(note number)?.....

<u>About this pregnancy</u>:

Have you had any problems with your health this pregnancy?.....

If yes, What kind of problem?

Excessive nausea
Threatened miscarriage
Hospital treatment(out patients)
Hospital treatment(in patients)
Special tests
Other.....

Summary of mother's health this pregnancy:

0 no difficulties
1 minor difficulties
2 marked difficulties
3 severe difficulties

Are you taking any prescribed medication?.....which one?.....

During this pregnancy have you been taking any non prescribed drugs?.....
which one(s)?

0 analgesics
1 Cannabis
2 Narcotics
3 other.....

Do you drink alcohol?.....

Have you modified your drinking habits in relation with your pregnancy?.....

How? 0 Stopped drinking since learning of pregnancy
1 almost complete abstention
2 a bit less than before

How much(pints of beer, glasses of wine) do you drink in a week?.....

If you stopped drinking alcohol after you became pregnant, when did you do so?

0 1st trimester
1 2nd trimester
2 3rd trimester

Were you informed about harmful effects of alcohol in pregnancy at any time before or during the pregnancy?

0 No
1 Yes

What do you estimate is the risk of having problems with the baby of an average british woman if she continues drinking during the pregnancy?(In a scale of 0 to 100) delete the number you estimate.

0 10 20 30 40 50 60 70 80 90 100

(no chance) (certain to happen)

What do you estimate is <u>your risk</u> of having problems with the baby if you continue drinking during the pregnancy?(In a scale of 0 to 100) delete the number you estimate.

0 10 20 30 40 50 60 70 80 90 100

(no chance) (certain to happen)

Were you adviced by any health professional about abstaining from drinking alcohol during pregnancy?

0 No
1 Yes

Did they offer any specific support for stopping alcohol consumption during pregnancy?

0 No
1 Yes

Did the information ,advice, or specific support, change your previous pattern of alcohol drinking?

0 No
1 Yes

Do you think drinking alcohol is harmful for the baby?

0 No
1 Yes
2 I don't know

Have you continued smoking?

0 I did not smoke even before pregnancy
1 I used to smoke but I stopped long before I decided to get pregnant
2 I stopped smoking when I decided to get pregnant
3 I stopped smoking since learning of pregnancy
4 I reduced smoking to less than five cigarettes p/day
5 I continued to smoke

If you still smoke, how many cigarettes do you smoke daily?

0 1-4
1 5-20
2 over 21

If you stopped smoking after you became pregnant,when did you do so?

0 1st trimester
1 2nd trimester
2 3rd trimester

Does your partner or anybody else smoke in your house ?

0 no
1 yes,partner.
2 yes,other .....

If you smoke or have smoked , how old were you when you started smoking?.....

How many cigarettes you used to smoke before becoming pregnant?

0 1-4
1 5-20
2 over 21.

Were you informed about harmful effects of smoking during pregnancy at any time before or during the pregnancy?

0 No
1 Yes
2 I don't remember

What do you estimate is the risk of having problems with the baby of an average british woman if she continues smoking during the pregnancy?(In a scale of 0 to 100) delete the number you estimate.

0 10 20 30 40 50 60 70 80 90 100

(no chance) (certain to happen)

What do you estimate is <u>your risk</u> of having problems with the baby if you continue smoking during the pregnancy?(In a scale of 0 to 100) delete the number you estimate.

0 10 20 30 40 50 60 70 80 90 100

(no chance) (certain to happen)

Do you think smoking during pregnancy is harmful for the baby?

0 No
1 Yes
2 I don't know

Were you adviced by any health professional about stop smoking during pregnancy?

0 No
1 Yes
2 I don't remeber

Which professional ?

0 GP
1 Midwife
2 Obstetrician
3 other

Please tick what risks or harmful effects were included when they gave you information:

0 None
1 low birthweight
2 short infant lenght and head circumpherence
3 premature delivery
4 increased risk of ectopic pregnancy
5 increased risk of miscarriage
6 increased risk of premature rupture of fetal membranes
7 increased risk of sudden infant death syndrome
8 higuer risk of acute and chronic respiratory diseases in the infant
9 decrease in child's growth(after birth)
10 increased risk of hyperactivity and attention disorders (after birth)

Was some specific support or treatment offered to you in order to help you quit smoking?

0 No
1 Yes
2 I don't remember

Did the information,advice or specific support modify your cigarette's smoking?

0 No
1 Yes

If you <u>did not quit</u> smoking what was the main reason for not to do it?(tick more than one if applicable)

0 lack of information and advice(nobody told me)
1 lack of motivation(I was informed but I was not interested)
2 lack of some specific treatment(no specific plan of action was offered)
3 lack of support from the GP or midwife(they were not interested)
4 lack of support from my partner(he was not involved or interested)
5 I do not believe it is important
6 I prefer not to think about it
7 I don't know

Are you still working?

0 no
1 yes ,part-time
2 yes ,full-time

When did you stop working?

0 was not working before pregnancy
1 during 1st trimester
2 during 2nd trimester
3 during 3rd trimester

In relation to this pregnancy, did you try to become pregnant?

0 no
1 Not particularly
2 yes

If you tried, did you have any particular difficulty to get it?

0 no
1 yes , but no medical treatment was necessary
2 yes, we required tests and medical treatment(please note).....
.....

Was this pregnancy planned?.....

How long did it take to become pregnant(weeks ,months).....

Were you pleased when you became pregnant?

0 pleased
1 Didn't mind
2 not pleased

Was your partner pleased?

0 pleased
1 didn't mind
2 not pleased
3 don't know

Did you at any time think seriously of not going through with the pregnancy(contemplated termination)?

0 no
1 yes

Current state

When did you start prenatal care ?(GP or hospital)

0 1st trimester
1 2nd trimester
2 3rd trimester

Does the baby feel like a person yet?

0 no
1 not sure
2 yes

Have you given the baby a name of any sort?(Include "private" names)

0 no
1 yes

Have you made any preparations for the baby,eg. clothes, cot?

0 none
1 some
2 lots

)o you want a boy or girl?

0 boy
1 girl
2 don't mind

)oes your partner want a boy or girl?

0 boy
1 girl
2 he doesn't mind
3 I don't know

If you already know the sex of your baby ,how do you feel about it?

0 pleased
1 don't mind
2 disappointed

Have you had any special test to check your baby's health?

0 none
1 amniocentesis
2 Chorionic villus biopsy
3 Rh incompatibility
4 other.....
5 don't know

Are you planning on breastfeeding?

0 No
1 Maybe
2 Yes

<u>Early childhood and personal history :</u>

Were you healthy during your childhood(up to eleventh birthday)?

0 No,often ill
1 Reasonably healthy, no major illnesses
2 Yes , very healthy
3 don't know

What was your home like when you were a child?
Probes: were there money problems, how did your parents get along , were there arguments , was there any violence , were you mostly happy or miserable).

Emotional security

0 very insecure
1 markedly insecure
2 reasonably secure
3 very secure
4 don't remember

Physical security

0 very insecure
1 markedly insecure
2 reasonably secure
3 very secure
4 don't remember

Did your parents have religious beliefs?

0 No, not at all
1 Observed the rituals but religion was not important in the home
2 Yes, fairly strong. Parents involved the children in church life and / or religious beliefs were important aspect of home life
3 Yes, very strong .Religious beliefs were rigorously held and observed.
4 don't remember

Do you, yourself, have any religious beliefs?

0 No, not at all
1 Observe the rituals but religion is not important.
2 Yes, fairly strong.
3 Yes, very strong.

When you were a child did anyone ever deliberately hurt you physically?Was anybody violent with you?Were you physically harmed?

0 No, not subject to any deliberate physical violence apart from the usual parental discipline(occasional smacks).
1 Yes, occasionally received intentional and violent hurt.
2 Yes, often received intentional and violent hurt.
3 don't remember.

When you were a child did anybody ever touch you? In a sexual way? Were you ever interfered with? (Probe for any sexual contact, eg. for exposure, masturbation in front of ,or with, or actual sex.)

0 No
1 Yes, isolated incidents of exposure or masturbation, no actual contact.
2 Yes, incidents of exposure or masturbation over continuous period.
3 Yes, actual contact ,interfered with,attempted sex but only iso lated incidents.
4 Yes, actual contact, interfered with, over a continuous period
5 Don't remember.

Were you separated from either of your parents for a month or more before you were eleven?

Mother
0 No
1 Yes
2 don't know.

Father
0 No
1 Yes
2 don't know

How old were you when this happened?.....

For how long were you separated?
0 less than 2 months.
1 between 2 months and one year.
2 more than a year.
3 Don't remember.

Why were you separated?
0 Parents death
1 parents illness
2 childs illness
3 Parental separation
4 Taken into care
5 Other.....
6 don't know.

Who looked after you then?
0 Other parent
1 Relatives
2 In care
3 Foster parents
4 Adopted
5 Other.....
6 Don't know.

Did any of your parents smoke?
0 No
1 Yes ,Mother
2 Yes, Father
3 Yes, both of them

Did any of your parents have problems with alcohol?
0 No
1 Yes, Mother
2 Yes, Father
3 Yes, both of them.

Have you any past history of psychiatric treatment?

0 No
1 Yes , but no medication was given
2 Yes , I was treated with medication at home
3 Yes , I was admitted at the hospital

If you have had previous psychiatric treatment,which was the diagnosis?.....

Has your partner had previous psychiatric treatment?

0 No
1 Yes